

Banks, Kendra

217444

From: SANZA MCCLENDON [sanza.mcclendon@uspto.gov]
Sent: Monday, March 05, 2007 3:44 PM
To: STIC-EIC1700
Subject: Database Search Request, Serial Number: 10/525,351

Requester:
SANZA MCCLENDON (P/1711)
Art Unit:
GROUP ART UNIT 1711
Employee Number:
75688
Office Location:
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(571)272-1074
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10D79

SCIENTIFIC REFERENCE BR
Sci & Tech Inf - Cntr

MAR 7 2007

Pat. & T.M. Office

Case serial number:
10/525,351
Class / Subclass(es):
522/100
Earliest Priority Filing Date:
2/23/05
Format preferred for results:
Paper
Search Topic Information:
please search the 1,4-diacetylene polymers of claim 1
Special Instructions and Other Comments:

=> FILE REG

FILE 'REGISTRY' ENTERED ON 15 MAR 2007

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=> DISPLAY HISTORY FULL L1-

FILE 'HCAPLUS'

L1 34047 SEA TAKEDA ?/AU
L2 25 SEA GONOKAMI ?/AU
L3 3 SEA L1 AND L2
L4 7662 SEA ?DIACETYLEN?
L5 0 SEA L3 AND L4
L6 5766 SEA TAKEDA K?/AU
L7 16 SEA GONOKAMI M?/AU
L8 36 SEA L6 AND L4
L9 0 SEA L7 AND L4
SEL L8 1 RN

FILE 'REGISTRY'

L10 2 SEA (25568-84-7/BI OR 68777-91-3/BI)

FILE 'LREGISTRY'

L11 STR

FILE 'REGISTRY'

L12 14 SEA SSS SAM L11

FILE 'LREGISTRY'

L13 STR L11

FILE 'REGISTRY'

L14 7 SEA SSS SAM L13
L15 160 SEA SSS FUL L13
SAV L15 MCC351/A

FILE 'HCA'

L16 9398 SEA METAL####(2A)ALKOXIDE#
L17 614 SEA ALKOXIDE#(2A)(CONDENS? OR POLYCONDENS?)
L18 11207 SEA ALKOXY# OR ALKOXY?(2A)SILANE#
L19 11993 SEA PHOTODEGRA? OR PHOTODECOMP? OR PHOTO(2A)(DEGRA? OR
DECOMP?)
L20 158753 SEA THERMODECOMP? OR THERMODEGRA? OR (THERMAL? OR
THERMO? OR HEAT?)(2A)(DECOMP? OR DEGRA?)
L21 21106 SEA DEPOLYM?

FILE 'REGISTRY'

L22 1 SEA L15 AND L10

FILE 'HCA'

L23 10 SEA L22

L24 1171 SEA L15

L25 1 SEA L23 AND ((L16 OR L17 OR L18 OR L19 OR L20 OR L21))

L26 12 SEA L24 AND ((L16 OR L17 OR L18 OR L19 OR L20 OR L21))

FILE 'REGISTRY'

L27 129284 SEA M/ELS AND C H O/ELF

L28 42250 SEA L27 AND NO RSD/FA

L29 26724 SEA L28 NOT PMS/CI

L30 8590 SEA L29 AND 1/O

L31 2885 SEA L30 AND 2/NC

FILE 'HCA'

L32 460276 SEA L29

L33 0 SEA L23 AND L32

L34 8 SEA L24 AND L32

FILE 'REGISTRY'

E C H O SI/ELF NOT PMS/CI

L35 242421 SEA C H O SI/ELF NOT PMS/CI

L36 239604 SEA L35 AND 4/ELC.SUB

L37 166489 SEA L36 AND 1-4/O

FILE 'HCA'

L38 119937 SEA L37

L39 0 SEA L38 AND L23

L40 4 SEA L38 AND L24

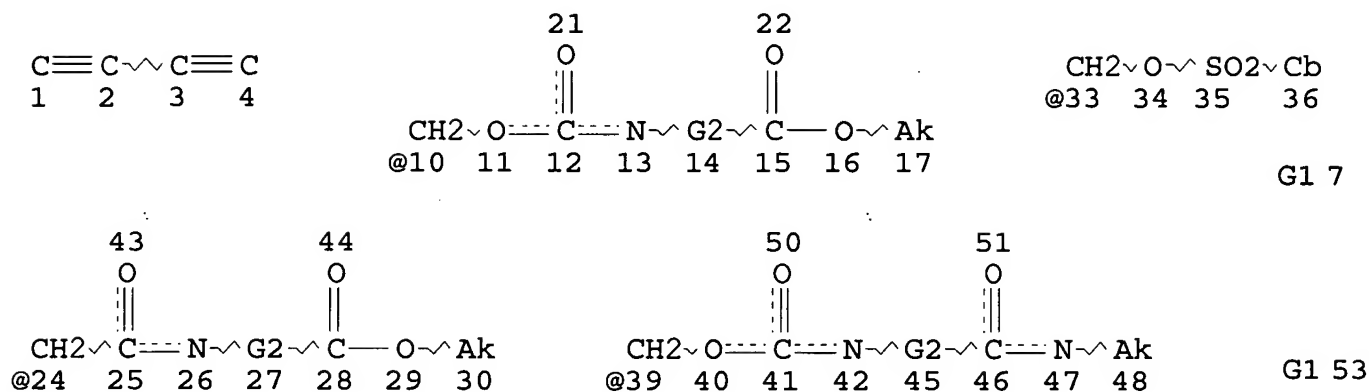
L41 15 SEA L25 OR L26 OR L40

L42 9 SEA L23 NOT L41

FILE 'REGISTRY'

=> D L15 QUE STAT

L13 STR



VAR G1=10/24/33/39

REP G2=(1-5) CH2

NODE ATTRIBUTES:

CONNECT IS E1 RC AT 17

CONNECT IS E1 RC AT 30

CONNECT IS E1 RC AT 48

DEFAULT MLEVEL IS ATOM

GGCAT IS SAT AT 17

GGCAT IS SAT AT 30

GGCAT IS UNS AT 36

GGCAT IS SAT AT 48

DEFAULT ECLEVEL IS LIMITED

GRAPH ATTRIBUTES:

RING(S) ARE ISOLATED OR EMBEDDED

NUMBER OF NODES IS 39

STEREO ATTRIBUTES: NONE

L15 160 SEA FILE=REGISTRY SSS FUL L13

100.0% PROCESSED 2247 ITERATIONS

160 ANSWERS

SEARCH TIME: 00.00.01

=> FILE HCA

FILE 'HCA' ENTERED ON 15 MAR 2007

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=> D L41 1-15 CBIB ABS HITSTR HITIND

L41 ANSWER 1 OF 15 HCA COPYRIGHT 2007 ACS on STN

140:254358 Organic solvent-soluble 1,4-disubstituted diacetylene polymers and their preparation by **depolymerization**,

composite compositions, and optical instruments. Takeda, Kenji; Goshin, Makoto (Japan Science and Technology Corporation, Japan).

Jpn. Kokai Tokkyo Koho JP 2004083819 A 20040318, 13 pp.

(Japanese). CODEN: JKXXAF. APPLICATION: ~~JP 2002-249950-20020829~~ *priority doc.*

AB The org. solvent-sol. 1,4-disubstituted diacetylene polymers (1,4-DDAP) comprise repeating units represented by general formula :CRC.tplbond.CCR': (R, R' = monovalent org. substituent), having av. d.p. 4-200 and Mw/Mn = 1.1-5.0, and are prepd. by decompn. of solns. of sol. 1,4-DDAP by (i) photolysis under irradiation of laser light with wavelength 250-1,200 nm, preferably, 550-900 nm, or by (ii) **thermal decompn.** at 100-300°. The

composite compns. contain the prepd. (decompd.) 1,4-DDAP and transparent resins being compatible to each other. In another alternative, composite compns. contain the prepd. 1,4-DDAP and inorg. polymers prepd. by **polycondensation** of **metal alkoxides** such as **alkoxysilanes**.

These compns. are formed to give films, sheets, 3-dimensional moldings, or surface layers for optical instruments such as transparent substrates, microglobular resonators, and optical waveguides. Thus, a CHCl₃ soln. of homopolymer of RC.tplbond.CC.tplbond.CR' [R, R' = (CH₂)₄CONHCH₂CO₂Et] with av. d.p. .apprx.20-8,800 and Mw/Mn 9.50 was irradiated with 775-nm femtosecond laser to obtain a polymer with av. d.p. .apprx.4-6 and Mw/Mn 1.1-2.0.

IT '68777-91-3P

(org. solvent-sol. 1,4-disubstituted diacetylene polymers and their prepn. by **depolymerization**, composite compns., and optical instruments)

RN 68777-91-3 HCA

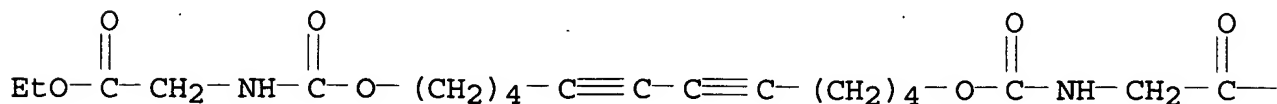
CN 5,18-Dioxa-3,20-diazadocosa-10,12-diyne-1,19-dioic acid, 4,19-dioxy-, diethyl ester, homopolymer (9CI). (CA INDEX NAME)

CM 1

CRN 68777-90-2

CMF C22 H32 N2 O8

PAGE 1-A



PAGE 1-B

—OEt

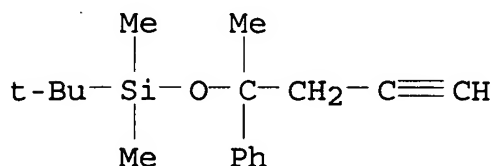
- IC ICM C08F038-00
ICS C08J005-00; C08L049-00; C08L101-00; G02F001-361
- CC 37-3 (Plastics Manufacture and Processing)
Section cross-reference(s): 38, 73
- ST disubstituted diacetylene polymer **depolymer** org solvent
soly; photolysis disubstituted diacetylene polymer org solvent soly;
thermal decomposition disubstituted diacetylene polymer
solvent soly
- IT **Silanes**
(alkoxy, polycondensates, composites; org. solvent-sol.
1,4-disubstituted diacetylene polymers and their prepn. by
depolymer., composite compns., and optical instruments)
- IT Vinyl compounds, uses
(aryl, polymers, blends with; org. solvent-sol. 1,4-disubstituted
diacetylene polymers and their prepn. by **depolymer**.,
composite compns., and optical instruments)
- IT Acrylic polymers, uses
Polyamides, uses
Polycarbonates, uses
Polyesters, uses
Polysulfones, uses
Polyurethanes, uses
(blends with; org. solvent-sol. 1,4-disubstituted diacetylene
polymers and their prepn. by **depolymer**., composite
compns., and optical instruments)
- IT Optical resonators
(microglobular; org. solvent-sol. 1,4-disubstituted diacetylene
polymers and their prepn. by **depolymer**., composite
compns., and optical instruments)
- IT **Depolymerization**
Optical films
Optical instruments
Optical waveguides
Photolysis
Thermal decomposition
(org. solvent-sol. 1,4-disubstituted diacetylene polymers and
their prepn. by **depolymer**., composite compns., and
optical instruments)
- IT Polydiacetylenes
(org. solvent-sol. 1,4-disubstituted diacetylene polymers and

- their prepn. by **depolymer.**, composite compns., and optical instruments)
- IT Polymer blends
(org. solvent-sol. 1,4-disubstituted diacetylene polymers and their prepn. by **depolymer.**, composite compns., and optical instruments)
- IT Polymers, uses
(photocurable, blends with; org. solvent-sol. 1,4-disubstituted diacetylene polymers and their prepn. by **depolymer.**, composite compns., and optical instruments)
- IT **Metal alkoxides**
(**polycondensates**, composites; org. solvent-sol. 1,4-disubstituted diacetylene polymers and their prepn. by **depolymer.**, composite compns., and optical instruments)
- IT Plastics, uses
(thermosetting, blends with; org. solvent-sol. 1,4-disubstituted diacetylene polymers and their prepn. by **depolymer.**, composite compns., and optical instruments)
- IT Hybrid organic-inorganic materials
(with **metal alkoxide polycondensates** ; org. solvent-sol. 1,4-disubstituted diacetylene polymers and their prepn. by **depolymer.**, composite compns., and optical instruments)
- IT 25568-84-7, Polycyclopentadiene
(blends with; org. solvent-sol. 1,4-disubstituted diacetylene polymers and their prepn. by **depolymer.**, composite compns., and optical instruments)
- IT **68777-91-3P**
(org. solvent-sol. 1,4-disubstituted diacetylene polymers and their prepn. by **depolymer.**, composite compns., and optical instruments)
- L41 ANSWER 2 OF 15 HCA COPYRIGHT 2007 ACS on STN
- 139:291799 Glaser oxidative coupling in ionic liquids. An improved synthesis of conjugated **1,3-diynes**. Yadav, J. S.; Reddy, B. V. S.; Reddy, K. Bhaskar; Gayathri, K. Uma; Prasad, A. R. (Division of Organic Chemistry, Indian Institute of Chemical Technology, Hyderabad, 500 007, India). Tetrahedron Letters, 44(34), 6493-6496 (English) 2003. CODEN: TELEAY. ISSN: 0040-4039. OTHER SOURCES: CASREACT 139:291799. Publisher: Elsevier Science B.V..
- AB Terminal alkynes undergo oxidative-coupling smoothly in the presence of the CuCl-TMEDA catalytic system in hydrophobic [bmim]PF₆ ionic liq. under aerobic conditions to produce 1,3-diynes in excellent yields under mild conditions. The substrates, alkynes, show enhanced reactivity and selectivity in ionic liqs. The recovery of the catalyst is facilitated by the hydrophobic nature of the [bmim]PF₆ ionic liq.
- IT **609768-39-0**

(prepn. of conjugated 1,3-diynes by oxidative Glaser coupling reaction of terminal alkynes using ionic liqs. catalyst)

RN 609768-39-0 HCA

CN Silane, (1,1-dimethylethyl)dimethyl[(1-methyl-1-phenyl-3-butynyl)oxy]- (9CI) (CA INDEX NAME)

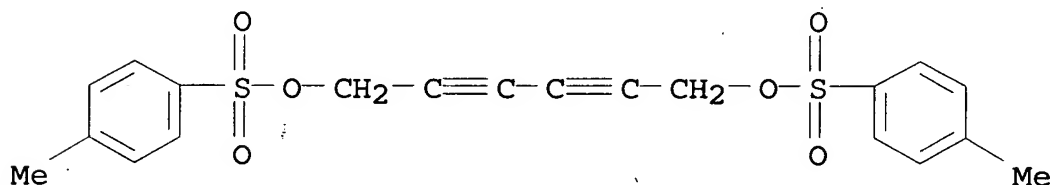


IT 32527-15-4P 609768-42-5P

(prepn. of conjugated 1,3-diynes by oxidative Glaser coupling reaction of terminal alkynes using ionic liqs. catalyst)

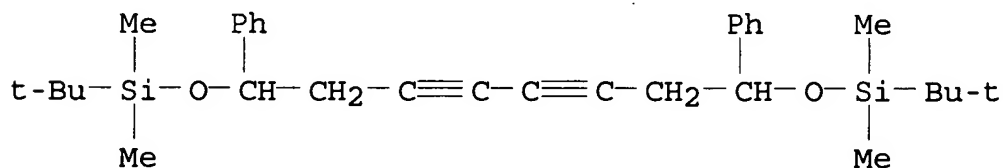
RN 32527-15-4 HCA

CN 2,4-Hexadiyne-1,6-diol, bis(4-methylbenzenesulfonate) (9CI) (CA INDEX NAME)



RN 609768-42-5 HCA

CN 4,13-Dioxa-3,14-disilahexadeca-7,9-diyne, 2,2,3,3,14,14,15,15-octamethyl-5,12-diphenyl- (9CI) (CA INDEX NAME)



CC 21-2 (General Organic Chemistry)

IT 107-19-7, 2-Propyn-1-ol 536-74-3, Phenylacetylene 627-41-8,
3-Methoxy-1-propyne 629-05-0, 1-Octyne 693-02-7, 1-Hexyne
765-03-7, 1-Dodecyne 928-90-5, 5-Hexyn-1-ol 2170-06-1,
Trimethylsilylphenylacetylene 6165-76-0 6712-35-2 19596-07-7,
4-Cyano-1-butyne 40365-61-5 213331-29-4 609768-39-0

(prepn. of conjugated 1,3-diynes by oxidative Glaser coupling reaction of terminal alkynes using ionic liqs. catalyst)

IT 886-66-8P 1120-29-2P, 5,7-Dodecadiyne 3031-68-3P,

2,4-Hexadiyne-1,6-diol 18277-20-8P, 7,9-Hexadecadiyne
20726-67-4P 24574-07-0P, 11,13-Tetracosadiyne 32527-15-4P
74602-32-7P, 5,7-Dodecadiyne-1,12-diol 87282-82-4P,
4,6-Decadiyenedinitrile 159429-90-0P 609768-40-3P 609768-41-4P
609768-42-5P

(prepn. of conjugated 1,3-diynes by oxidative Glaser coupling
reaction of terminal alkynes using ionic liqs. catalyst)

L41 ANSWER 3 OF 15 HCA COPYRIGHT 2007 ACS on STN

128:257779 Spectroscopic investigation of the **photodegradation**
of polydiacetylene solutions. Bloor, David; Worboys, Michael R.
(Department of Physics, University of Durham, Durham, DH1 3LE, UK).
Journal of Materials Chemistry, 8(4), 903-912 (English) 1998.
CODEN: JMACEP. ISSN: 0959-9428. Publisher: Royal Society of
Chemistry.

AB The degrdn. of CHCl₃ solns. of ~~nBCMU~~-polydiacetylenes and related
~~polymers with chiral urethane side-groups stored in Pyrex glassware~~
~~under normal lab. atm. and lighting~~ was studied by the measurement
of changes in the optical absorption spectrum. Both the magnitude
and wavelength of the absorbance max. decrease as the mean mol. wt.
is reduced by degrdn. Measurements made on a ref. sample stored in
the dark showed that thermal degrdn. was negligible. Comparison
with the spectra of a sample degraded by UV radiation ($\lambda < 300$
nm) shows that the degrdn. behavior of white light exposed samples
is distinctly different. While the precise temporal dependence of
the degrdn. varies from polymer to polymer there is a discernible
generic behavior. This is also true for the shift in the energy of
the absorption max. when plotted against the decrease in absorption
strength. A model based on the known dependence of the absorption
max. on polymer chain length is developed to describe the obsd.
generic behavior. Degrdn. by random scission followed by
depolymer. is consistent with the exptl. data. The
measurements show that polydiacetylene solns. can be stored in the
dark for up to 4 yr but that solns. left open to the light can have
shelf lives as short as 10 days.

IT 68777-87-7, Poly-3BCMU 68777-93-5, Poly-4BCMU
105710-00-7, Poly-9BCMU 117646-53-4

(spectroscopic investigation of photodegrdn. of polydiacetylene
solns. in relation to storage stability)

RN 68777-87-7 HCA

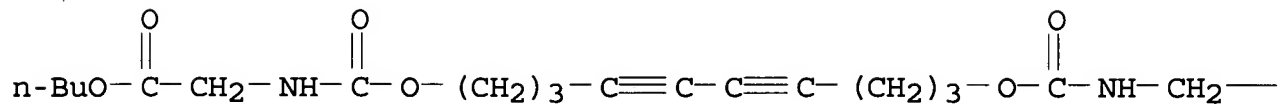
CN 5,16-Dioxa-3,18-diazaeicosa-9,11-diynedioic acid, 4,17-dioxo-,
dibutyl ester, homopolymer (9CI) (CA INDEX NAME)

CM 1

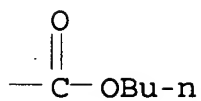
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CMF C24 H36 N2 O8

PAGE 1-A



PAGE 1-B



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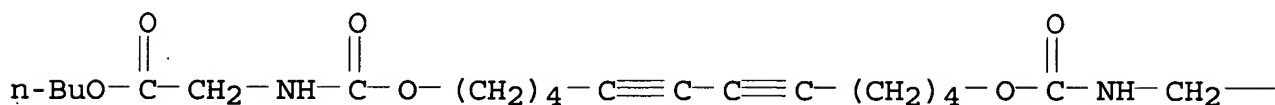
CN 5,18-Dioxa-3,20-diazadocosa-10,12-diynedioic acid, 4,19-dioxo-, dibutyl ester, homopolymer (9CI) (CA INDEX NAME)

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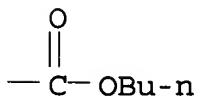
CRN 68777-92-4

CMF C26 H40 N2 O8

PAGE 1-A



PAGE 1-B



RN 105710-00-7 HCA

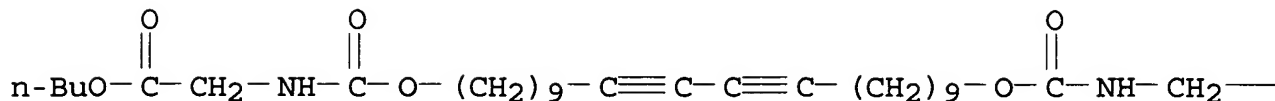
CN 5,28-Dioxa-3,30-diazadotriaconta-15,17-diynedioic acid, 4,29-dioxo-, dibutyl ester, homopolymer (9CI) (CA INDEX NAME)

CM 1

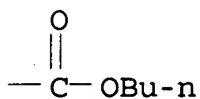
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CMF C36 H60 N2 O8

PAGE 1-A



PAGE 1-B

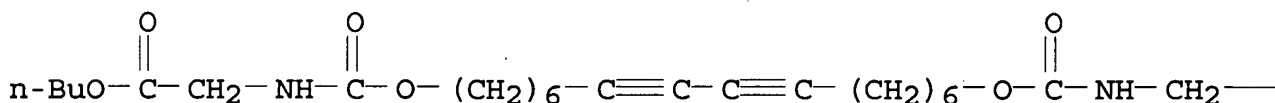


RN 117646-53-4 HCA
 CN 5,22-Dioxa-3,24-diazahexacos-12,14-diynedioic acid, 4,23-dioxo-,
 dibutyl ester, homopolymer (9CI) (CA INDEX NAME)

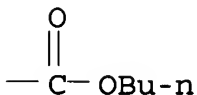
CM 1

CRN 117646-52-3
 CMF C30 H48 N2 O8

PAGE 1-A



PAGE 1-B



CC 35-8 (Chemistry of Synthetic High Polymers)
 IT 68777-87-7, Poly-3BCMU 68777-93-5, Poly-4BCMU
 70221-28-2, 3BCMU homopolymer, sru 76135-61-0, 4BCMU homopolymer,
 sru 105710-00-7, Poly-9BCMU 105710-75-6, 9BCMU
 homopolymer, sru 117646-53-4 117647-32-2, 6BCMU
 homopolymer, sru 120028-01-5 122144-07-4, 4RMBU homopolymer
 122144-10-9, 9SMBU homopolymer 144336-79-8
 (spectroscopic investigation of photodegrdn. of polydiacetylene
 solns. in relation to storage stability)

L41 ANSWER 4 OF 15 HCA COPYRIGHT 2007 ACS on STN

120:135333 **Thermooxidative degradation of**

three-dimensional dimethacrylates with a conjugated bond network. Os'kina, O. Yu.; Kuznetsov, Yu. L.; Sivergin, Yu. M. (Inst. Khim. Fiz. im. Semenova, Moscow, Russia). Khimicheskaya Fizika, 12(11), 1482-7 (Russian) 1993. CODEN: KHFID9. ISSN: 0207-401X.

AB TG, DTA, and DTG data obtained in air at 20-700° were compared for polymers prep'd. from diacetylene group-contg. monomers, such as hexadiynediol dimethacrylate, hexadiynediol diacrylate (I), hexadiynediol ditosylate, and hexadiynediol naphthalenecarbamate, and for polymers prep'd. from oligoester acrylates not contg. diacetylene groups, such as hexanediol dimethacrylate (II) and triethylene glycol dimethacrylate (III). Polymers from diacetylene group-contg. monomers showed a significantly higher thermooxidative stability due to their crosslinked structure than II homopolymer or III homopolymer. I-III copolymers showed higher thermooxidative stability than the above homopolymers. ESR study confirmed a polyconjugated 3-dimensional network structure of the hexadiynediol di(meth)acrylate homopolymers.

IT 32535-60-7

(thermooxidative degrdn. of)

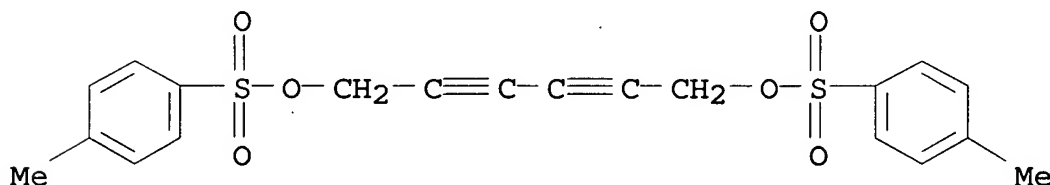
RN 32535-60-7 HCA

CN 2,4-Hexadiyne-1,6-diol, bis(4-methylbenzenesulfonate), homopolymer (9CI) (CA INDEX NAME)

CM 1

CRN 32527-15-4

CMF C20 H18 O6 S2



CC 35-8 (Chemistry of Synthetic High Polymers)

IT Polymer **degradation**

(oxidative, **thermal**, of oligoester acrylate polymers, polydiacetylenes, and crosslinked acrylic polydiacetylenes)

IT 25086-77-5 25101-31-9, Triethylene glycol dimethacrylate homopolymer 27813-91-8, 1,6-Hexanediol dimethacrylate homopolymer 32535-60-7 121417-92-3 122404-84-6 153311-58-1

(thermooxidative degrdn. of)

L41 ANSWER 5 OF 15 HCA COPYRIGHT 2007 ACS on STN

119:149495 Negative-working photoresist composition. Kobayashi, Yoshihito; Niki, Hiroichi; Oonishi, Kyonobu (Toshiba Corp., Japan). Jpn. Kokai Tokkyo Koho JP 04340550 A 19921126 Heisei, 30 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 1991-112079 19910517.

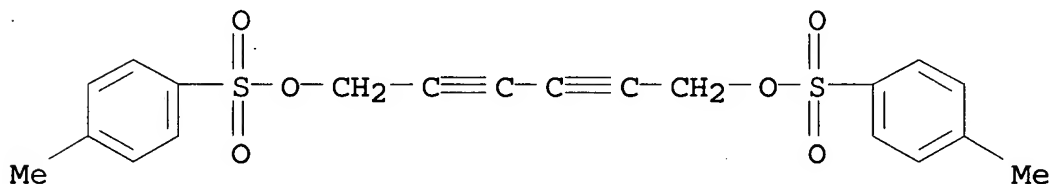
AB The title photoresist compn. contains an alkali-sol. polymer and R2CR1R3C.tplbond.CC.tplbond.CR4R5R6 [R1-6 = H, arom. hydrocarbon group, heterocyclyl, or carboarom. or carbocyclic group; R1 and R2 or R4 and R5 may form hydrocarbon or heterocyclic ring]. The compn. shows high sensitivity to KrF excimer laser and can be used for high-resoln. patterning.

IT 32527-15-4 120551-36-2 149873-06-3
149873-07-4 149873-08-5 149873-12-1
149873-13-2

(photoresist compn. contg.)

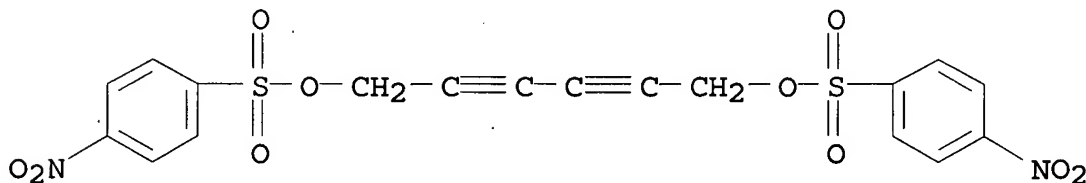
RN 32527-15-4 HCA

CN 2,4-Hexadiyne-1,6-diol, bis(4-methylbenzenesulfonate) (9CI) (CA INDEX NAME)



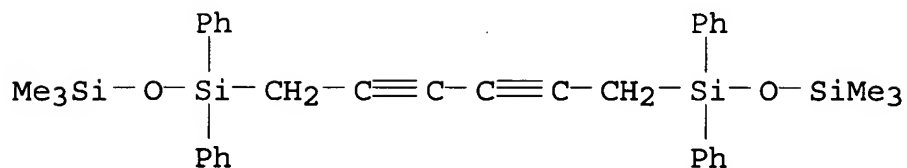
RN 120551-36-2 HCA

CN Benzenesulfonic acid, 4-nitro-, 2,4-hexadiyne-1,6-diyl ester (9CI) (CA INDEX NAME)



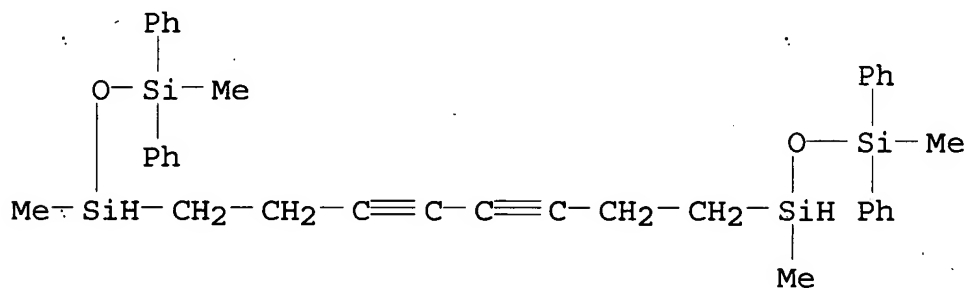
RN 149873-06-3 HCA

CN Disiloxane, 1,1'-(2,4-hexadiyne-1,6-diyl)bis[3,3,3-trimethyl-1,1-diphenyl- (9CI) (CA INDEX NAME)



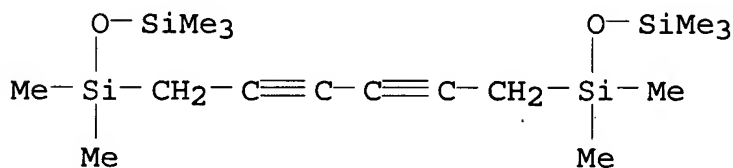
RN 149873-07-4 HCA

CN Disiloxane, 1,1'-(3,5-octadiyne-1,8-diyl)bis[1,3-dimethyl-3,3-diphenyl- (9CI) (CA INDEX NAME)



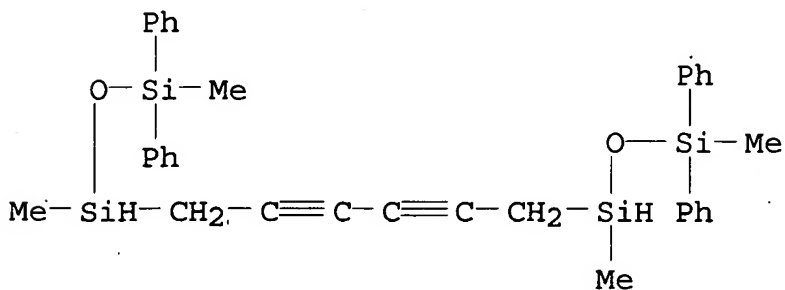
RN 149873-08-5 HCA

CN Disiloxane, 1,1'-(2,4-hexadiyne-1,6-diyl)bis[1,1,3,3,3-pentamethyl- (9CI) (CA INDEX NAME)

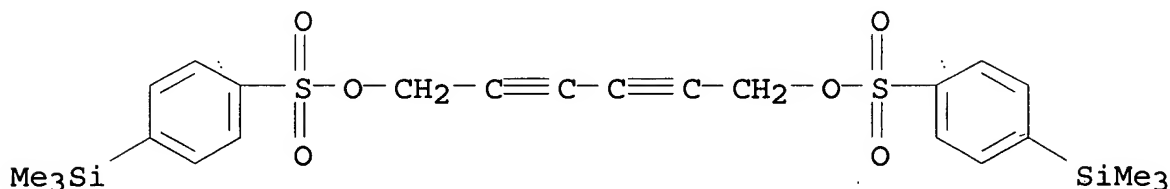


RN 149873-12-1 HCA

CN Disiloxane, 1,1'-(2,4-hexadiyne-1,6-diyl)bis[1,3-dimethyl-3,3-diphenyl- (9CI) (CA INDEX NAME)



RN 149873-13-2 HCA
 CN Benzenesulfonic acid, 4-(trimethylsilyl)-, 2,4-hexadiyne-1,6-diyl ester (9CI) (CA INDEX NAME)



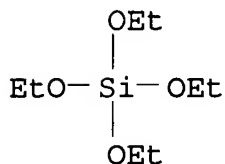
IC ICM G03F007-025
 ICS G03F007-004; G03F007-023; G03F007-038; G03F007-075; H01L021-027
 CC 74-5 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)
 IT 3031-68-3, 2,4-Hexadiyne-1,6-diol 23487-69-6 24979-70-2,
 Poly(p-vinylphenol) 24996-66-5 27029-76-1, m-Cresol-p-cresol-
 formaldehyde copolymer 32527-15-4 119588-34-0
 120551-36-2 135831-10-6 149873-02-9 149873-03-0
 149873-04-1 149873-05-2 149873-06-3 149873-07-4
 149873-08-5 149873-09-6 149873-10-9 149873-11-0
 149873-12-1 149873-13-2 149972-27-0
 149972-28-1
 (photoresist compn. contg.)

L41 ANSWER 6 OF 15 HCA COPYRIGHT 2007 ACS on STN
 119:118655 Organic-inorganic homogeneous polymeric composites and process for their preparation. David, Israel A.; Harmer, Mark Andrew; Meth, Jeffrey S.; Scherer, George W. (du Pont de Nemours, E. I., and Co., USA). PCT Int. Appl. WO 93/01226 A1 19930121, 39 pp. DESIGNATED STATES: W: CA, JP; RW: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LU, MC, NL, SE. (English). CODEN: PIXXD2. APPLICATION: WO 1992-US5441 19920702. PRIORITY: US 1991-725168 19910703.
 AB The title composites, useful as protective coatings and nonlinear optical elements that exhibit 3rd order nonlinear optical activity, comprise an interpermeating network of 15-90 vol.% of an inorg. glassy polymer (silica, alumina, etc.) and 10-85 vol.% of an org. polymer component which is unextractable from the composite. The composites are prep'd. by contacting an org. polymer, e.g., poly(ethyloxazoline), and an inorg. polymer precursor, e.g. tetra-Et orthosilicate, together in a soln. in a common solvent, e.g., aq. THF, and allowing formation of an inorg. glassy polymer while removing the solvent. Glass transition or a cryst. m.p. of the org. polymer is undetectable in the composite.
 IT 78-10-4, Tetraethyl orthosilicate
 (hydrolytic polymn. of, in presence of org. polymer,

interpermeating network from, sol-gel process for)

RN 78-10-4 HCA

CN Silicic acid (H₄SiO₄), tetraethyl ester (8CI, 9CI) (CA INDEX NAME)



IT 68777-93-5P

(interpermeating network contg. inorg. polymer and, single-phase, prepn. of, sol-gel process for)

RN 68777-93-5 HCA

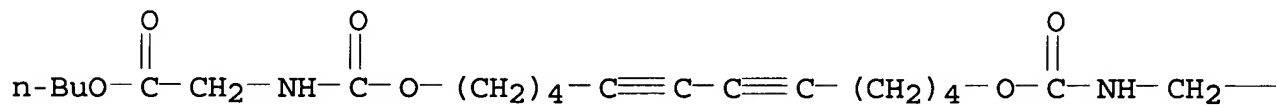
CN 5,18-Dioxa-3,20-diazadocosa-10,12-diyneedioic acid, 4,19-dioxo-, dibutyl ester, homopolymer (9CI) (CA INDEX NAME)

CM 1

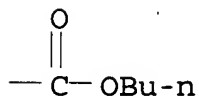
CRN 68777-92-4

CMF C26 H40 N2 O8

PAGE 1-A



PAGE 1-B



IC ICM C08G079-00

ICS C08K005-54; C03C014-00; G02F001-35; C08L101-00

CC 37-6 (Plastics Manufacture and Processing)

Section cross-reference(s): 35, 42, 73

IT 78-10-4, Tetraethyl orthosilicate 546-68-9, Tetraisopropyl titanate 2171-98-4 7446-70-0, Aluminum chloride (AlCl₃), reactions 11069-05-9 24685-89-0

(hydrolytic polymn. of, in presence of org. polymer, interpermeating network from, sol-gel process for)

IT 9003-47-8P, Poly(vinylpyridine) 9011-14-7P, Poly(methyl

methacrylate) 25038-54-4P, Poly[imino(1-oxo-1,6-hexanediyl)],
 preparation 25322-68-3P 36345-04-7P 62744-35-8P, Poly(sodium
 styrenesulfonate) 68777-93-5P 81772-15-8P 134270-46-5P
 149305-33-9P 149305-35-1P

(interpermeating network contg. inorg. polymer and, single-phase,
 prepn. of, sol-gel process for)

L41 ANSWER 7 OF 15 HCA COPYRIGHT 2007 ACS on STN

118:169947 Response of DBAR parameter to ultraviolet light-induced
 electronic structure changes in a conjugated polymer. Huang, W. F.;
 Lim, K. C. (Phys. Dep., Univ. Louisville, KY, 40292, USA).
 Materials Science Forum, 105-110 (Positron Annihilation, Pt. 3),
 1589-95 (English) 1992. CODEN: MSFOEP. ISSN: 0255-5476.

AB The Doppler broadening of annihilation radiation (DBAR) lineshape
 parameter S was measured during UV light photoinduced degrdn. of the
 electronic structure of the conjugated ~~butoxycarbonylmethylurethane~~
~~group-contg. polydiacetylene~~. The S parameter increased initially
 for the first 50 min and reached a satn. value there after as the
 sample was irradiated with UV light, which ~~photodegraded~~
~~the polymer and changes its pi-pi* bonding absorption spectra~~.
 This is the first clear evidence of response of S parameter to the
 changes in the electronic structure of a conjugated polymer.

IT 68777-93-5

(electronic structure changes in UV-irradiated, response of
 Doppler broadening of annihilation radiation to)

RN 68777-93-5 HCA

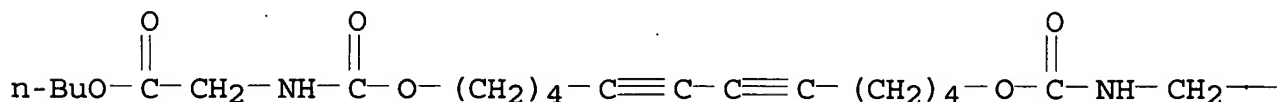
CN 5,18-Dioxa-3,20-diazadocosa-10,12-diynedioic acid, 4,19-dioxo-,
 dibutyl ester, homopolymer (9CI) (CA INDEX NAME)

CM 1

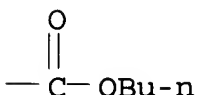
CRN 68777-92-4

CMF C26 H40 N2 O8

PAGE 1-A



PAGE 1-B



CC 36-5 (Physical Properties of Synthetic High Polymers)

IT 68777-93-5

(electronic structure changes in UV-irradiated, response of Doppler broadening of annihilation radiation to)

L41 ANSWER 8 OF 15 HCA COPYRIGHT 2007 ACS on STN

115:113980 Solution-spray flash vacuum pyrolysis: a new method for the synthesis of linear polyynes with odd numbers of C.tplbond.C bonds from substituted 3,4-dialkynyl-3-cyclobutene-1,2-diones. Rubin, Yves; Lin, Sophia S.; Knobler, Carolyn B.; Anthony, John; Boldi, Armen M.; Diederich, Francois (Dep. Chem. Biochem., Univ. California, Los Angeles, CA, 90024-1569, USA). Journal of the American Chemical Society, 113(18), 6943-9 (English) 1991. CODEN: JACSAT. ISSN: 0002-7863. OTHER SOURCES: CASREACT 115:113980.

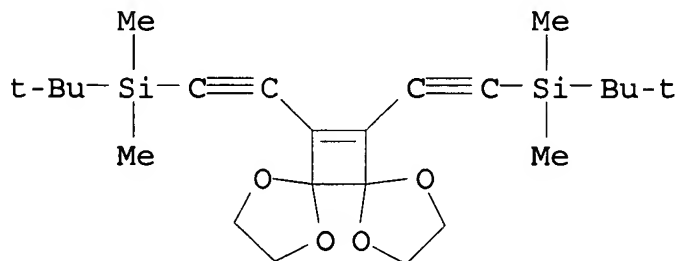
AB A wide range of linear polyynes, e.g. PhC.tplbond.CC.tplbond.CC.tplbond.CPh and PhC.tplbond.CC.tplbond.CC.tplbond.CC.tplbond.CC.tplbond.CPh, were prepd. in 42 to 99% yield by soln.-spray flash vacuum pyrolysis (SS-FVP) of the readily available 3,4-dialkynyl-3-cyclobutene-1,2-diones. The synthesis affords multigram quantities of a series of hexatriynes and decapentaynes from precursors that cannot be subjected to conventional flash vacuum pyrolysis. Similarly, the dodecahexayne was obtained in 31% yield by SS-FVP of the bis(3-cyclobutene-1,2-dione). The synthesis of the new 3,4-dialkynyl-3-cyclobutene-1,2-diones via the ketals is reported. The x-ray crystal structure of 1,10-diphenyl-1,3,5,7,9-decapentayne was detd. and the crystal packing structure provides valuable information to explain the thermal polymn. behavior obsd. for this compd. in the cryst. state.

IT 123002-92-6

(hydrolysis of)

RN 123002-92-6 HCA

CN Silane, (1,4,7,10-tetraoxadispiro[4.0.4.2]dodec-11-ene-11,12-diyl-di-2,1-ethynediyl)bis[(1,1-dimethylethyl)dimethylsilyl- (9CI) (CA INDEX NAME)

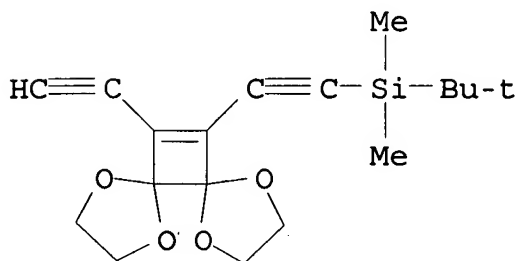


IT 134816-69-6P

(prepn. and coupling reaction of)

RN 134816-69-6 HCA

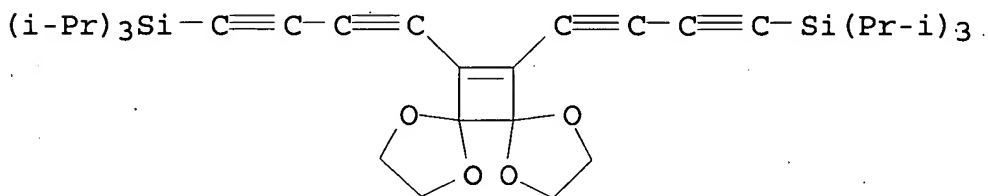
CN Silane, (1,1-dimethylethyl)[(12-ethynyl-1,4,7,10-tetraoxadispiro[4.0.4.2]dodec-11-en-11-yl)ethynyl]dimethyl- (9CI)
(CA INDEX NAME)



IT 134816-65-2P 134816-68-5P
(prepn. and hydrolysis of)

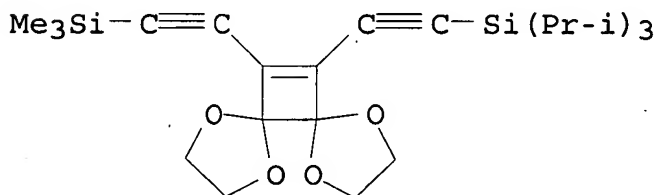
RN 134816-65-2 HCA

CN Silane, (1,4,7,10-tetraoxadispiro[4.0.4.2]dodec-11-ene-11,12-diyl-di-1,3-butadiyne-4,1-diyl)bis[tris(1-methylethyl)- (9CI) (CA INDEX NAME)



RN 134816-68-5 HCA

CN Silane, trimethyl[[12-[[tris(1-methylethyl)silyl]ethynyl]-1,4,7,10-tetraoxadispiro[4.0.4.2]dodec-11-en-11-yl]ethynyl]- (9CI) (CA INDEX NAME)

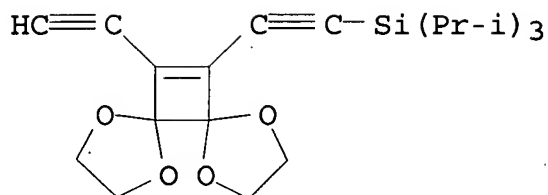


IT 134816-67-4P

(prepn. and reaction of, with trimethylsilyl chloride)

RN 134816-67-4 HCA

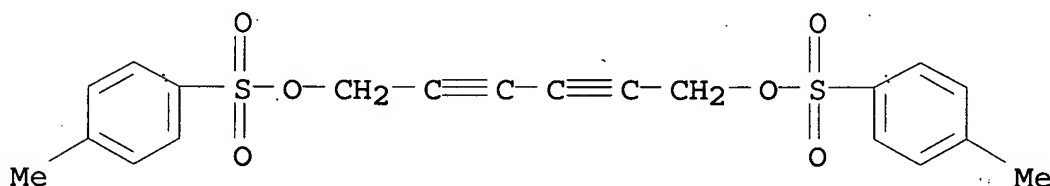
CN Silane, [(12-ethynyl-1,4,7,10-tetraoxadispiro[4.0.4.2]dodec-11-en-11-yl)ethynyl]tris(1-methylethyl)- (9CI) (CA INDEX NAME)



IT 32527-15-4P

(prepn. and reaction with Bu lithium-trimethylsilyl chloride,
hexatriene deriv. from)

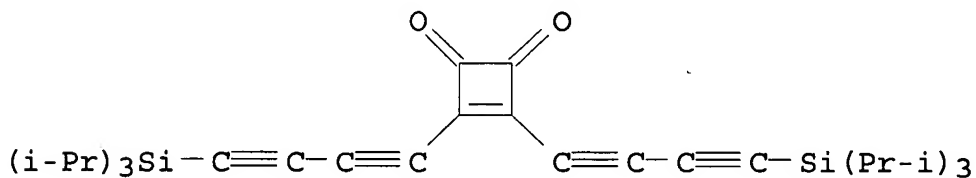
RN 32527-15-4 HCA

CN 2,4-Hexadiyne-1,6-diol, bis(4-methylbenzenesulfonate) (9CI) (CA
INDEX NAME)

IT 134816-71-0P 134816-73-2P

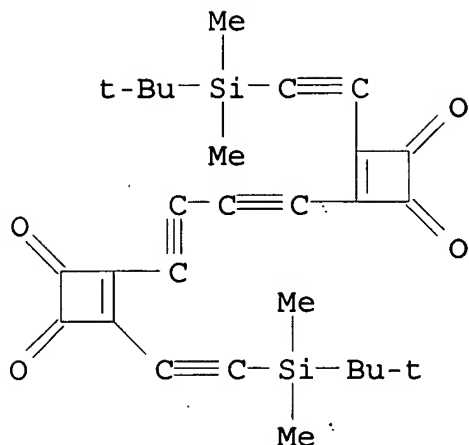
(prepn. and soln.-spray flash vacuum pyrolysis of)

RN 134816-71-0 HCA

CN 3-Cyclobutene-1,2-dione, 3,4-bis[4-[tris(1-methylethyl)silyl]-1,3-
butadiynyl]- (9CI) (CA INDEX NAME)

RN 134816-73-2 HCA

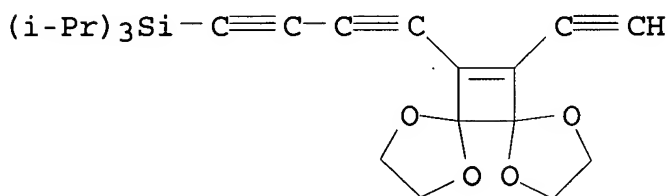
CN 3-Cyclobutene-1,2-dione, 3,3'-(1,3-butadiyne-1,4-diyl)bis[4-[[1,1-
dimethylethyl]dimethylsilyl]ethynyl]- (9CI) (CA INDEX NAME)



IT 134816-64-1P 134816-81-2P
(prepn. of)

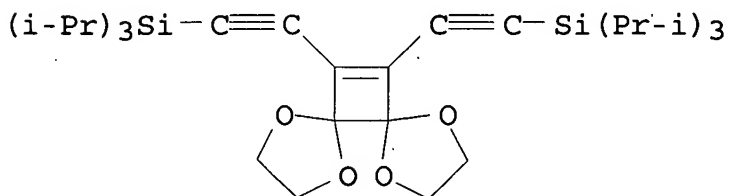
RN 134816-64-1 HCA

CN Silane, [4-(12-ethynyl-1,4,7,10-tetraoxadispiro[4.0.4.2]dodec-11-en-11-yl)-1,3-butadiynyl]tris(1-methylethyl)- (9CI) (CA INDEX NAME)



RN 134816-81-2 HCA

CN Silane, (1,4,7,10-tetraoxadispiro[4.0.4.2]dodec-11-ene-11,12-diyl-di-2,1-ethynediyl)bis[tris(1-methylethyl)- (9CI) (CA INDEX NAME)

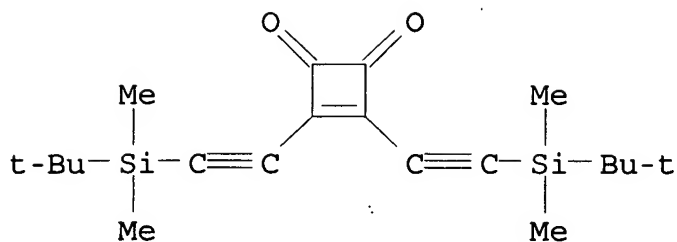


IT 123002-89-1 123002-90-4 125358-37-4
134816-72-1

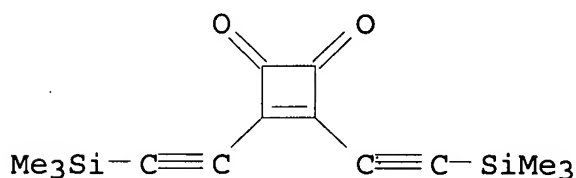
(soln.-spray flash vacuum pyrolysis of)

RN 123002-89-1 HCA

CN 3-Cyclobutene-1,2-dione, 3,4-bis[[(1,1-dimethylethyl)dimethylsilyl]ethynyl]- (9CI) (CA INDEX NAME)

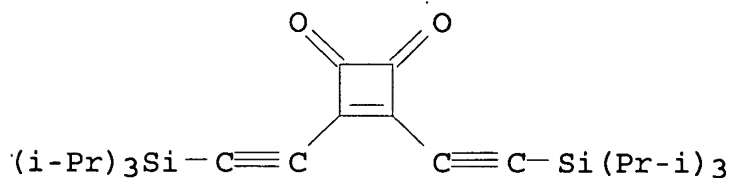


RN 123002-90-4 HCA

CN 3-Cyclobutene-1,2-dione, 3,4-bis[(trimethylsilyl)ethynyl]- (9CI)
(CA INDEX NAME)

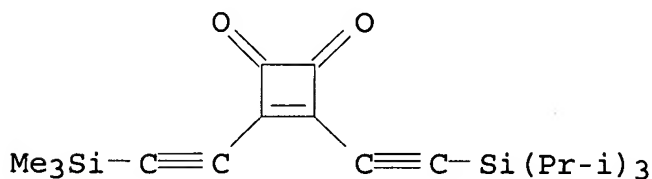
RN 125358-37-4 HCA

CN 3-Cyclobutene-1,2-dione, 3,4-bis[[tris(1-methylethyl)silyl]ethynyl]- (9CI) (CA INDEX NAME)



RN 134816-72-1 HCA

CN 3-Cyclobutene-1,2-dione, 3-[(trimethylsilyl)ethynyl]-4-[[tris(1-methylethyl)silyl]ethynyl]- (9CI) (CA INDEX NAME)



CC 23-2 (Aliphatic Compounds)

Section cross-reference(s): 24, 75

IT **Thermal decomposition**

(flash, soln.-spray, of dialkynylcyclobutenedione, polyynes from)

IT 123002-92-6

(hydrolysis of)
 IT 134816-69-6P
 (prepn. and coupling reaction of)
 IT 134816-65-2P 134816-68-5P 134816-70-9P
 (prepn. and hydrolysis of)
 IT 134816-67-4P
 (prepn. and reaction of, with trimethylsilyl chloride)
 IT 32527-15-4P
 (prepn. and reaction with Bu lithium-trimethylsilyl chloride,
 hexatriene deriv. from)
 IT 134816-71-0P 134816-73-2P
 (prepn. and soln.-spray flash vacuum pyrolysis of)
 IT 501-65-5P 20264-56-6P 21752-86-3P 111409-80-4P
 134816-64-1P 134816-66-3P 134816-74-3P,
 4,6,8-Dodecatriyne 134816-75-4P 134816-76-5P 134816-77-6P
 134816-78-7P 134816-79-8P 134816-80-1P 134816-81-2P
 (prepn. of)
 IT 59973-06-7 123002-89-1 123002-90-4 125358-17-0
 125358-34-1 125358-35-2 125358-37-4 134816-72-1
 (soln.-spray flash vacuum pyrolysis of)

L41 ANSWER 9 OF 15 HCA COPYRIGHT 2007 ACS on STN

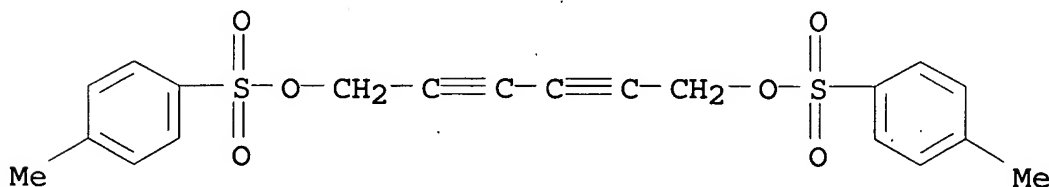
110:154986 Optical spectroscopic and diffractometric study of poly(vinyl chloride)-diacetylenyltoluenesulfonate compositions. Toskubaeva, G. K.; Tashkhodzhaeva, S. A.; Vakhobov, D. A.; Ziyamov, D.; Abduvaliev, N. A.; Khodzhaeva, F. Kh. (Inst. Fiz. Khim. Polim., Tashkent, USSR). Uzbekskii Khimicheskii Zhurnal (5), 53-5 (Russian) 1988. CODEN: UZKZAC. ISSN: 0042-1707.

AB The title study revealed that the films cast from a PVC-diacetylenyltoluenesulfonate (I) soln. contain I homopolymer which **depolymerizes** on UV irradiation of the films. In contact with I PVC undergoes dechlorination which increased with increasing content of I. The UV irradiation resulted in oxidation of PVC and reduction of oxidized groups in I and I homopolymer.

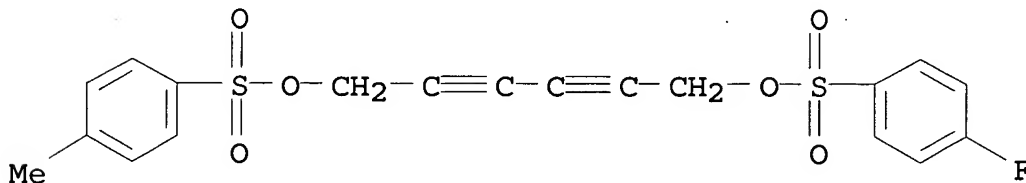
IT 32527-15-4
 (PVC films containing, composition of, UV irradiation effect on)

RN 32527-15-4 HCA

CN 2,4-Hexadiyne-1,6-diol, bis(4-methylbenzenesulfonate) (9CI) (CA INDEX NAME)



- CC 35-8 (Chemistry of Synthetic High Polymers)
- ST PVC diacetylenyltoluenesulfonate film chem compn; UV irradiatn PVC diacetylenyltoluenesulfonate film; dechlorination PVC diacetylenyltoluenesulfonate film; oxidn PVC diacetylenyltoluenesulfonate film; **depolymerization** diacetylenyltoluenesulfonate polymer PVC film
- IT Polyacetylenes, reactions
(diacetylenyltoluenesulfonate-based, photochem. **depolymerization** of, in PVC films)
- IT **Depolymerization**
(photochem., of diacetylenyltoluenesulfonate homopolymer, in PVC-diacetylenyltoluenesulfonate films)
- IT **32527-15-4**
(PVC films contg., compn. of, UV irradiatn. effect on)
- L41 ANSWER 10 OF 15 HCA COPYRIGHT 2007 ACS on STN
- 107:198959 Synthesis and polymerization of the asymmetric diacetylene derivative 6-(p-toluenesulfonyloxy)-2,4-hexadiynyl p-fluorobenzenesulfonate. Strohmriegl, Peter (Bayreuther Inst. Makromol. (BIMF), Univ. Bayreuth, Bayreuth, 8580, Fed. Rep. Ger.). Makromolekulare Chemie, Rapid Communications, 8(9), 437-41 (English) 1987. CODEN: MCRCD4. ISSN: 0173-2803.
- AB The title monomer was prepd. by reaction of 2,4-hexadiyne-1,6-diol with p-toluenesulfonyl chloride and p-fluorobenzenesulfonyl chloride and was polymerized thermally yielding homopolymer which exhibited anisotropic permittivity. The polymer had an induction period of 180 h at 50° and reached a conversion of 98% within 100 h. The induction period was reduced to 60 h at 60°, but the conversion was no longer quant. due to monomer **thermal decomposition**.
- IT **110866-87-0P**
(prepn. and polymerization of)
- RN 110866-87-0 HCA
- CN Benzenesulfonic acid, 4-fluoro-, 6-[[[(4-methylphenyl)sulfonyl]oxy]-2,4-hexadiynyl ester (9CI) (CA INDEX NAME)



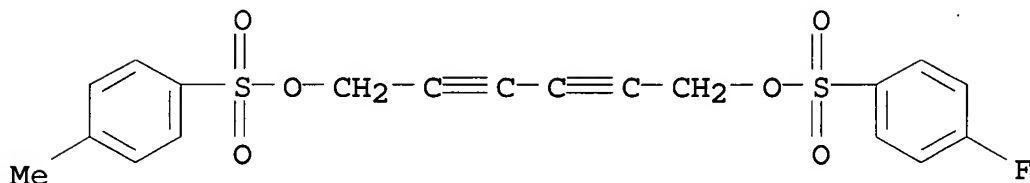
- IT **110866-88-1P**
(prepn. and properties of)
- RN 110866-88-1 HCA
- CN Benzenesulfonic acid, 4-fluoro-, 6-[[[(4-methylphenyl)sulfonyl]oxy]-

2,4-hexadiynyl ester, homopolymer (9CI) (CA INDEX NAME)

CM 1

CRN 110866-87-0

CMF C19 H15 F O6 S2



CC 35-2 (Chemistry of Synthetic High Polymers)

IT 110866-87-0P

(prepn. and polymn. of)

IT 110866-88-1P

(prepn. and properties of)

L41 ANSWER 11 OF 15 HCA COPYRIGHT 2007 ACS on STN

107:59492 Practical aspects of physicochemical kinetics using thermal techniques. Khanna, Y. P.; Taylor, T. J. (Allied-Signal Inc., Morristown, NJ, 07960, USA). Polymer Engineering and Science, 27(10), 764-71 (English) 1987. CODEN: PYESAZ. ISSN: 0032-3888.

AB The use of thermal anal. techniques in detg. the degrdn. kinetics of doped polyacetylene, the loss of volatiles (plasticizer) from plasticized PVC, the optimal polymn. conditions for pivalolactone, the order-disorder transition in thermochromic poly[4,6-decadiyne-1,10-bis(butoxycarbonylmethyleneurethane)] films, and the crystn. kinetics of nylon 6 and metallic glasses was described.

IT 68777-87-7

(order-disorder transition in, detn. of, by thermal anal.)

RN 68777-87-7 HCA

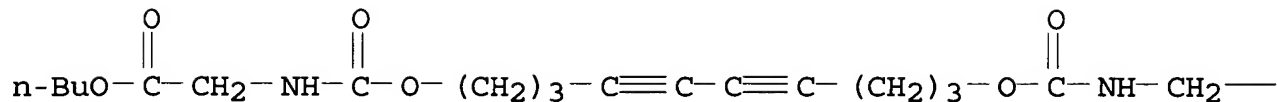
CN 5,16-Dioxa-3,18-diazaeicosa-9,11-diynedioic acid, 4,17-dioxo-, dibutyl ester, homopolymer (9CI) (CA INDEX NAME)

CM 1

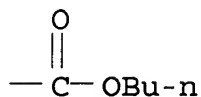
CRN 68777-86-6

CMF C24 H36 N2 O8

PAGE 1-A

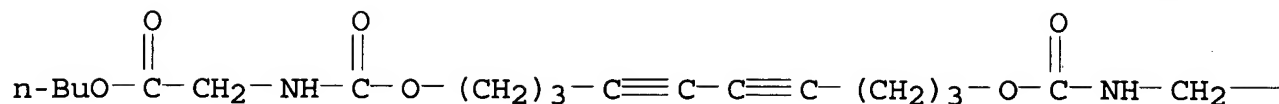


PAGE 1-B

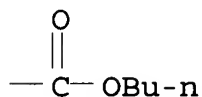


- CC 35-1 (Chemistry of Synthetic High Polymers)
Section cross-reference(s): 36, 57
- IT Kinetics of polymer **degradation**
(**thermal**, of doped polyacetylene, detn. of, by thermal anal.)
- IT **68777-87-7**
(order-disorder transition in, detn. of, by thermal anal.)
- L41 ANSWER 12 OF 15 HCA COPYRIGHT 2007 ACS on STN
103:178815 Decomposition of poly(diacetylenes). Wegner, Gerhard; Leyrer, Reinhold J.; Mueller, Michael A. (BASF A.-G., Fed. Rep. Ger.). Ger. Offen. DE 3346718 A1 19850704, 16 pp. (German). CODEN: GWXXBX. APPLICATION: DE 1983-3346718 19831223.
- AB Alkadiyne polymers with any desired mol. wt. are prepd. simply, rapidly, and reproducibly by degrdn. in the presence of sensitizers activated chem., photochem., or thermally. Thus, bubbling finely dispersed O through a CHCl₃ soln. (1.1 g/L) of 4,6-decadiyne-1,10-diol bis[(carbobutoxymethyl)urethane] polymer [**68777-87-7**] (relative viscosity 1.90, prepd. by gamma-ray polymn.) and exposing the soln. to a high-pressure Hg lamp for 2.5 min lowered the polymer reduced viscosity to 1.74, compared with 1.83 in the absence of O.
- IT **68777-87-7**
(degrdn. of, for controlled mol. wt., sensitizers for)
- RN **68777-87-7** HCA
- CN 5,16-Dioxa-3,18-diazaeicosa-9,11-diynedioic acid, 4,17-dioxo-, dibutyl ester, homopolymer (9CI) (CA INDEX NAME)
- CM 1
- CRN **68777-86-6**
- CMF C24 H36 N2 O8

PAGE 1-A

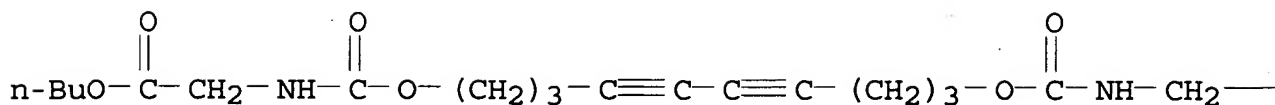


PAGE 1-B

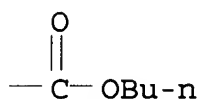


- IC ICM C08F138-02
ICS C08F008-50
- CC 35-8 (Chemistry of Synthetic High Polymers)
Section cross-reference(s): 74
- IT Polymer **degradation** catalysts
(thermal, AIBN, for polyalkadiynes with controlled mol. wt.)
- IT 68777-87-7
(degrdn. of, for controlled mol. wt., sensitizers for)
- L41 ANSWER 13 OF 15 HCA COPYRIGHT 2007 ACS on STN
103:169906 Dry film resist and method for producing resist patterns.
Wegner, Gerhard; Mueller, Michael (BASF A.-G. , Fed. Rep. Ger.).
Ger. Offen. DE 3342829 A1 19850605, 14 pp. (German). CODEN:
GWXXBX. APPLICATION: DE 1983-3342829 19831126.
- AB Dry-film resists having good mech., thermal, and chem. resistances
are composed of a temporary, dimensionally stable support having
laminated thereto a pos.-working solid resist layer based upon a
photodecomposable diacetylene compd. polymer. Thus,
4,6-decadiyne-1,10-diol bis(butoxycarbonylmethylurethane) was
polymd. by irradiation with γ -rays (3 Mrad) to give a homopolymer
in 30% yield. The homopolymer was then dissolved in CHCl_3 ,
spin-coated on a surface-oxidized Si wafer, dried to give a 40 nm
thick layer, imagewise exposed for 2 min with a 1000-W Xe-Hg lamp,
and developed with Me_2CO to give a resist pattern with good
contours.
- IT 68777-86-6
(pos.-working photoresists from)
- RN 68777-86-6 HCA
- CN 5,16-Dioxa-3,18-diazaeicosa-9,11-diynedioic acid, 4,17-dioxo-,
dibutyl ester (9CI) (CA INDEX NAME)

PAGE 1-A



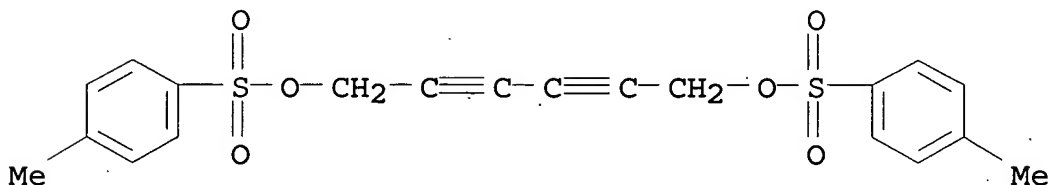
PAGE 1-B



- IC ICM G03F007-00
ICS G03C001-68
- CC 74-5 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)
- IT Resists
(photo-, pos.-working, **photodecomposable** diacetylene compd. polymers as)
- IT 67-64-1, uses and miscellaneous
(developer, for pos.-working photoresists prepd. from **photodecomposable** diacetylene compd. polymers)
- IT 68777-86-6
(pos.-working photoresists from)
- L41 ANSWER 14 OF 15 HCA COPYRIGHT 2007 ACS on STN
- 87:6598 Mass spectral and pyrolysis/gas-chromatographic studies of the monomer and polymer of bis(p-toluenesulfonate) of 2,4-hexadiyne-1,6-diol. Ghotra, J. S.; Stevens, G. C.; Bloor, D. (Phys. Dep., Queen Mary Coll., London, UK). Journal of Polymer Science, Polymer Chemistry Edition, 15(5), 1155-67 (English) 1977. CODEN: JPLCAT. ISSN: 0449-296X.
- AB The **thermal decompn.** of 2,4-hexadiyne-1,6-diol bis(p-toluenesulfonate) [32527-15-4] monomer (I) and polymer (II) [32535-60-7] appears to be identical at both high and low temps. and occurs principally through side-group loss. Decompn. during the latter stages of solid-state thermal polymn. at 80° and of 100% II at 112° was obsd. by mass spectrometry and the decompn. fragments identified. Pyrolysis of I and II was studied at 400-1000° by gas chromatog. and mass spectrometry and the principal pyrolysis products were triacetylene and p-toluenesulfonic acid. The fragmentation routes leading to and derived from these products are discussed.
- IT 32527-15-4 32535-60-7
(thermal degrdn. of, mechanism of, gas chromatog. and mass spectral detn. of)

RN 32527-15-4 HCA

CN 2,4-Hexadiyne-1,6-diol, bis(4-methylbenzenesulfonate) (9CI) (CA INDEX NAME)



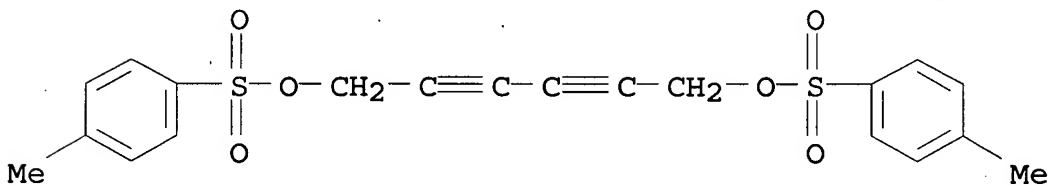
RN 32535-60-7 HCA

CN 2,4-Hexadiyne-1,6-diol, bis(4-methylbenzenesulfonate), homopolymer (9CI) (CA INDEX NAME)

CM 1

CRN 32527-15-4

CMF C20 H18 O6 S2



CC 35-6 (Synthetic High Polymers)

Section cross-reference(s): 76

IT Polymer degradation

(thermal, of hexadiynediol tosylate polymer, mechanism of, gas chromatog. and mass spectral detn. of)

IT 32527-15-4 32535-60-7

(thermal degrdn. of, mechanism of, gas chromatog. and mass spectral detn. of)

L41 ANSWER 15 OF 15 HCA COPYRIGHT 2007 ACS on STN

84:5555 Solid state polymerization of bis(p-toluenesulfonate) of 2,4-hexadiyne-1,6-diol. 2. Optical and scanning electron microscope observations. Bloor, D.; Koski, L.; Stevens, G. C. (Queen Mary Coll., Univ. London, London, UK). Journal of Materials Science, 10(10), 1689-96 (English) 1975. CODEN: JMTSAS. ISSN: 0022-2461.

AB The thermal polymn. of 2,4-hexadiyne-1,6-diol bis(p-toluenesulfonate) single crystals under Ar proceeded by a homogeneous single-phase transformation, as detd. by optical and

scanning electron microscopy. The polymer [32535-60-7] did not **decompose** when **heated** rapidly until 210°; under prolonged **heating**, however, **decompn.** started at 110° for samples prepd. at 60°. The morphol. of polymer extd. from partially-polymd. crystals was also studied.

IT 32535-60-7P

(prepn. of cryst., morphol. and thermal stability in relation to)

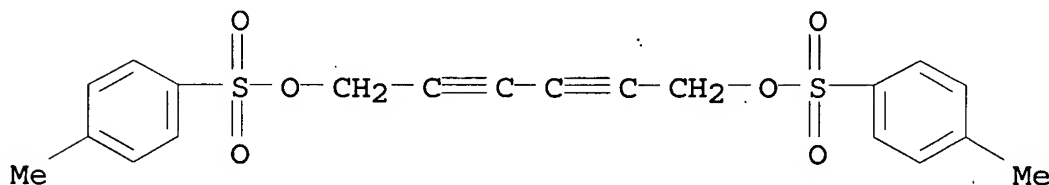
RN 32535-60-7 HCA

CN 2,4-Hexadiyne-1,6-diol, bis(4-methylbenzenesulfonate), homopolymer (9CI) (CA INDEX NAME)

CM 1

CRN 32527-15-4

CMF C20 H18 O6 S2



CC 35-5 (Synthetic High Polymers)

Section cross-reference(s): 75

IT Degradation

Depolymerization

(of hexadiynediol toluenesulfonate polymer crystals, polymn. temp. in relation to)

IT 32535-60-7P

(prepn. of cryst., morphol. and thermal stability in relation to)

=> D L34 1 CBIB ABS HITSTR HITIND

L34 ANSWER 1 OF 8 HCA COPYRIGHT 2007 ACS on STN

119:118655 Organic-inorganic homogeneous polymeric composites and process for their preparation. David, Israel A.; Harmer, Mark Andrew; Meth, Jeffrey S.; Scherer, George W. (du Pont de Nemours, E. I., and Co., USA). PCT Int. Appl. WO 9301226 A1 19930121, 39 pp. DESIGNATED STATES: W: CA, JP; RW: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LU, MC, NL, SE. (English). CODEN: PIXXD2. APPLICATION: WO 1992-US5441 19920702. PRIORITY: US 1991-725168 19910703.

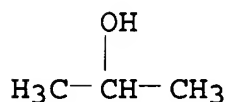
AB The title composites, useful as protective coatings and nonlinear optical elements that exhibit 3rd order nonlinear optical activity, comprise an interpermeating network of 15-90 vol.% of an inorg.

glassy polymer (silica, alumina, etc.) and 10-85 vol.% of an org. polymer component which is unextractable from the composite. The composites are prepd. by contacting an org. polymer, e.g., poly(ethyloxazoline), and an inorg. polymer precursor, e.g. tetra-Et orthosilicate, together in a soln. in a common solvent, e.g., aq. THF, and allowing formation of an inorg. glassy polymer while removing the solvent. Glass transition or a cryst. m.p. of the org. polymer is undetectable in the composite.

IT 546-68-9, Tetraisopropyl titanate 2171-98-4
(hydrolytic polymn. of, in presence of org. polymer,
interpermeating network from, sol-gel process for)

RN 546-68-9 HCA

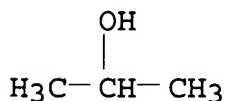
CN 2-Propanol, titanium(4+) salt (4:1) (CA INDEX NAME)



● 1/4 Ti(IV)

RN 2171-98-4 HCA

CN 2-Propanol, zirconium(4+) salt (9CI) (CA INDEX NAME)



● 1/4 Zr(IV)

IT 68777-93-5P

(interpermeating network contg. inorg. polymer and, single-phase,
prepn. of, sol-gel process for)

RN 68777-93-5 HCA

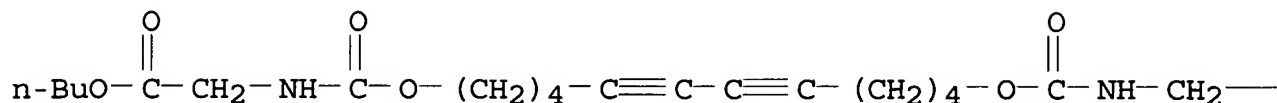
CN 5,18-Dioxa-3,20-diazadocosa-10,12-diynedioic acid, 4,19-dioxo-,
dibutyl ester, homopolymer (9CI) (CA INDEX NAME)

CM 1

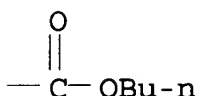
CRN 68777-92-4

CMF C26 H40 N2 O8

PAGE 1-A



PAGE 1-B



- IC ICM C08G079-00
ICS C08K005-54; C03C014-00; G02F001-35; C08L101-00
- CC 37-6 (Plastics Manufacture and Processing)
Section cross-reference(s): 35, 42, 73
- IT 78-10-4, Tetraethyl orthosilicate **546-68-9**, Tetraisopropyl titanate **2171-98-4** 7446-70-0, Aluminum chloride (AlCl₃), reactions 11069-05-9 24685-89-0
(hydrolytic polymn. of, in presence of org. polymer, interpermeating network from, sol-gel process for)
- IT 9003-47-8P, Poly(vinylpyridine) 9011-14-7P, Poly(methyl methacrylate) 25038-54-4P, Poly[imino(1-oxo-1,6-hexanediyl)], preparation 25322-68-3P 36345-04-7P 62744-35-8P, Poly(sodium styrenesulfonate) **68777-93-5P** 81772-15-8P 134270-46-5P 149305-33-9P 149305-35-1P
(interpermeating network contg. inorg. polymer and, single-phase, prepn. of, sol-gel process for)

=> D L42 1-9 TI

- L42 ANSWER 1 OF 9 HCA COPYRIGHT 2007 ACS on STN
TI Crosslinked polydiacetylene and its two- and three-component interpenetrating polymer networks (IPNs)
- L42 ANSWER 2 OF 9 HCA COPYRIGHT 2007 ACS on STN
TI Phase morphological characteristics of two polydiacetylene/epoxy resin interpenetrating polymer networks
- L42 ANSWER 3 OF 9 HCA COPYRIGHT 2007 ACS on STN
TI Polydiacetylene gels
- L42 ANSWER 4 OF 9 HCA COPYRIGHT 2007 ACS on STN
TI Thermochromic polyacetylenic composition, temperature-measuring and

indicia-displaying devices and a process or recording and thereafter erasing images

L42 ANSWER 5 OF 9 HCA COPYRIGHT 2007 ACS on STN

TI Thermochromic polyacetylenes containing urethane groups

L42 ANSWER 6 OF 9 HCA COPYRIGHT 2007 ACS on STN

TI Abrupt dissolution of polydiacetylenes

L42 ANSWER 7 OF 9 HCA COPYRIGHT 2007 ACS on STN

TI Soluble polydiacetylenes. I. Synthesis and properties

L42 ANSWER 8 OF 9 HCA COPYRIGHT 2007 ACS on STN

TI A planar-nonplanar conformational transition in conjugated polymer solutions

L42 ANSWER 9 OF 9 HCA COPYRIGHT 2007 ACS on STN

TI A visual conformational transition in a polymer solution

=> D L42 6,7 CBIB ABS HITSTR HITIND

L42 ANSWER 6 OF 9 HCA COPYRIGHT 2007 ACS on STN

94:31180 Abrupt dissolution of polydiacetylenes. Patel, G. N.; Khanna, Y. P. (Corp. Res. Cent., Allied Chem. Corp., Morristown, NJ, 07960, USA). Journal of Polymer Science, Polymer Physics Edition, 18(11), 2209-15 (English) 1980. CODEN: JPLPAY. ISSN: 0098-1273.

AB Polydiacetylenes $[:C(R)C.tplbond.CC(R):]_x$ [where $R = (CH_2)_nO_2CNHCH_2CO_2(CH_2)_mMe$ ($n = 3$ or 4 , $m = 1$ or 3)], which dissolve over a narrow (.apprx.3°) temp. range, have enthalpy of dissoln. (MEK, MeNO₂, EtOAc, m-C₆H₄Me₂, o-C₆H₄Cl₂, AcOH, DMF) 25-46 kJ/mol of the repeat unit, as shown by differential scanning calorimetry. The polymer crystals first form a red or purple soln., which turns yellow (accompanied by a dramatic increase in viscosity) with a slight increase in temp. The color changes (which resemble those obsd. upon melting) are attributed to a disruption of crystal planarity and are assocd. with H bonding.

IT 68777-91-3

(heat of soln. of)

RN 68777-91-3 HCA

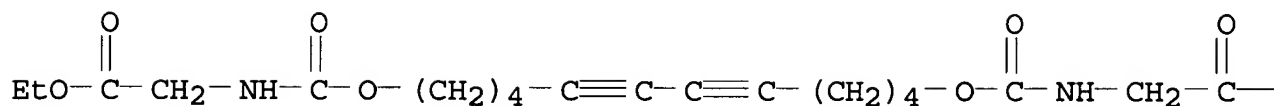
CN 5,18-Dioxa-3,20-diazadocosa-10,12-diynedioic acid, 4,19-dioxo-, diethyl ester, homopolymer (9CI) (CA INDEX NAME)

CM 1

CRN 68777-90-2

CMF C22 H32 N2 O8

PAGE 1-A



PAGE 1-B

—OEt

CC 35-5 (Synthetic High Polymers)

IT 68777-87-7 68777-89-9 **68777-91-3** 68777-93-5
 70221-28-2 76135-61-0 76135-62-1 76135-63-2
 (heat of soln. of)

L42 ANSWER 7 OF 9 HCA COPYRIGHT 2007 ACS on STN

93:168669 Soluble polydiacetylenes. I. Synthesis and properties.
 Patel, G. N. (Mater. Res. Cent., Allied Chem. Corp., Morristown, NJ,
 07960, USA). Polymer Preprints (American Chemical Society, Division
 of Polymer Chemistry), 19(2), 154-9 (English) 1978. CODEN: ACPPAY.
 ISSN: 0032-3934.

AB HO(CH₂)_nC.tplbond.CH (n = 1-4) were oxidatively coupled to give the
 diyndiols and treated with Me(CH₂)_mO₂CCH₂NCO (m = 1,3) to give the
 corresponding dicarbamate. The dicarbamates with n = 3 or 4 were
 polymd. by exposure to γ-radiation, giving polydiacetylenes
 which were thermochromic, undergoing a reversible green gold to red
 to yellow transition as the temp. increased, and were also fusible
 and sol. in common org. solvents. The dicarbamates crystd. in thin
 platelets .apprx.1 mil thick with area .apprx.1 in.². The partially
 polymd. monomers were also thermochromic, undergoing gradual,
 reversible color changes from dark blue to blue to violet to red
 over the temp. range from -180° to the m.p.

IT **68777-91-3P**
 (prepn. of thermochromic)

RN 68777-91-3 HCA

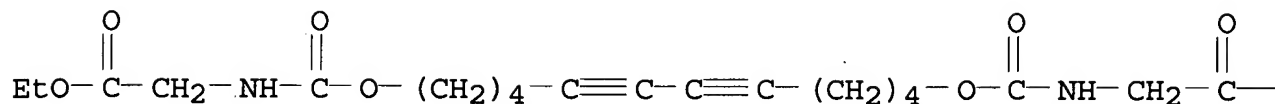
CN 5,18-Dioxa-3,20-diazadocosa-10,12-diyneedioic acid, 4,19-dioxo-,
 diethyl ester, homopolymer (9CI) (CA INDEX NAME)

CM 1

CRN 68777-90-2

CMF C22 H32 N2 O8

PAGE 1-A



PAGE 1-B

—OEt

CC 35-3 (Synthetic High Polymers)

Section cross-reference(s): 23

IT 68777-87-7P 68777-89-9P **68777-91-3P** 68777-93-5P
 (prepn. of thermochromic)

=> D HIS L43-

FILE 'HCA'

E DECOMPOSITION/CV
 L43 29838 S E3
 E DEGRADATION/CV
 L44 7211 S E3
 L45 0 S L23 AND (L43 OR L44)
 L46 1 S L24 AND (L43 OR L44)
 L47 QUE DECOMP? OR DEGRAD?
 L48 1 S L23 AND L47
 L49 28 S L24 AND L47
 L50 QUE SOL OR SOLUB? OR DISSOLV? OR DISSOLUT? OR SOLVENT?
 L51 9 S L49 AND L50

FILE 'LCA'

L52 11657 S (SOLUTION? OR SOLN# OR SOLVENT? OR RESOLVENT? OR RESOLU

FILE 'HCA'

L53 10 S L49 AND L52
 L54 8 S (L46 OR L48 OR L51 OR L53) NOT L41
 L55 11 S L49 NOT (L41 OR L54)

=> D L54 1-8 CBIB ABS HITSTR HITIND

L54 ANSWER 1 OF 8 HCA COPYRIGHT 2007 ACS on STN

125:22077 Chemical mechanism of photobleaching of poly-3BCMU film.

Zhang, Xiang-yang; Li, Qu; Liu, Ju-zheng; Sottini, S. (Department of Chemistry, National Laboratory of Molecular and Biomolecular Electronics, Southeast University, Nanjing, 210096, Peop. Rep. China). Journal of Photochemistry and Photobiology, A: Chemistry, 95(3), 239-244 (English) 1996. CODEN: JPPCEJ. ISSN: 1010-6030. Publisher: Elsevier.

AB The exptl. results of photobleaching of poly[4,6-decadiyne-1,10-diolbis(n-butoxycarbonylmethylurethane)] (poly-3BCMU) film are given in this paper. From changes in the UV spectra of the films before and after photobleaching and effects of oxygen and a laser on photobleaching, we might conclude that poly-3BCMU films undergo the degrdn. layer by layer from the surface to the inner region and that in every layer poly-3BCMU mols. **decomp.** step by step and finally form small **sol.** mols. Also, we studied in detail the effect of oxygen on photobleaching and concluded that the **decompn.** of the films is a zero-order reaction with respect to oxygen in air. The exptl. results could be of use to the photobleaching technique and waveguide manuf.

IT 68777-87-7

(effect of oxygen on photobleaching of polyurethane film as nonlinear optical material)

RN 68777-87-7 HCA

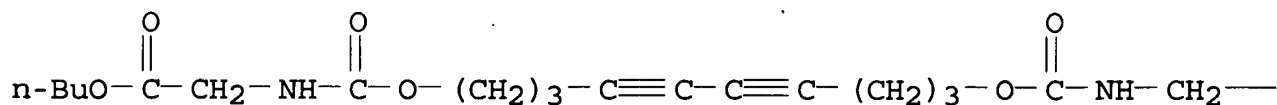
CN 5,16-Dioxa-3,18-diazaeicosa-9,11-diynedioic acid, 4,17-dioxo-, dibutyl ester, homopolymer (9CI) (CA INDEX NAME)

CM 1

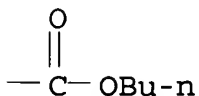
CRN 68777-86-6

CMF C24 H36 N2 O8

PAGE 1-A

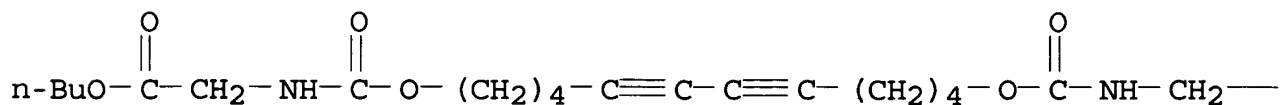


PAGE 1-B

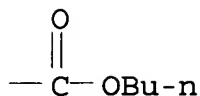


- CC 74-1 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)
Section cross-reference(s): 73
- IT 68777-87-7
(effect of oxygen on photobleaching of polyurethane film as nonlinear optical material)
- L54 ANSWER 2 OF 8 HCA COPYRIGHT 2007 ACS on STN
122:188597 Lamellar morphology of polydiacetylene thin films and its correlation with chain lengths. Albrecht, C.; Lieser, G.; Wegner, G. (Max-Planck-Institut fuer Polymerforschung, Mainz, Germany). ~~Progress in Colloid & Polymer Science, 92 (Orientational Phenomena in Polymers), 111-19 (English) 1993. CODEN: PCPSD7. ISSN: 0340-255X.~~
- AB Thin films of poly-4-BCMU were prep. from CHCl_3 soln. During the evapn. of the solvent the soln. becomes anisotropic before the solid state is reached. The morphol. of these films is lamellar, the lamellae being seen edge-on. Lamella thickness is proportional to the chain length of the wormlike polymers. Formation of lamellae is a function of the dwell time of the polymer in the liq. cryst. state. In the early stages lamella thickness is detd. by the no.-av. mol. wt. Chain ends are concd. in disordered interlamellar regions. Approaching equil. chain segregation with respect to chain lengths is obsd. In addn., the effect of electron irradiation damage in the polymer films is investigated.
- IT 68777-93-5, Poly-4-bcmu
(lamellar morphol. of polydiacetylene thin films and its correlation with chain lengths)
- RN 68777-93-5 HCA
- CN 5,18-Dioxa-3,20-diazadocosa-10,12-diyne-1,19-dioic acid, 4,19-dioxa-, dibutyl ester, homopolymer (9CI) (CA INDEX NAME)
- CM 1
- CRN 68777-92-4
- CMF C26 H40 N2 O8

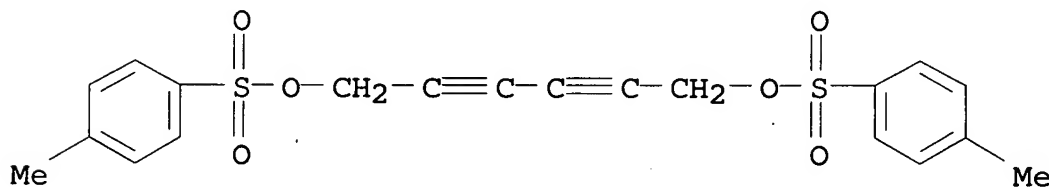
PAGE 1-A



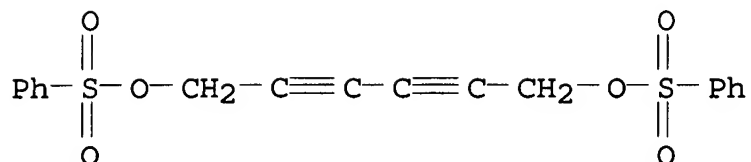
PAGE 1-B



- CC 36-2 (Physical Properties of Synthetic High Polymers)
 IT Polymer **degradation**
 (radiochem., damage to polydiacetylene thin films by electron
 irradiation.)
 IT 68777-93-5, Poly-4-bcmu 76135-61-0
 (lamellar morphol. of polydiacetylene thin films and its
 correlation with chain lengths)
- L54 ANSWER 3 OF 8 HCA COPYRIGHT 2007 ACS on STN
 121:289666 Photoresist composition. Kobayashi, Yoshihito (Tokyo
 Shibaura Electric Co, Japan). Jpn. Kokai Tokkyo Koho JP 06075377 A
 19940318 Heisei, 41 pp. (Japanese). CODEN: JKXXAF. APPLICATION:
 JP 1992-226130 19920825.
- AB The title compn. comprises an alkali-sol. polymer, a
 compd. having a substituent **decomp.** by an acid, and a
 photo acid generator, R2SO3CR1R3C.tplbond.CC.tplbond.CCR4R6O3SR5 [R1-6 = arom. hydrocarbyl, heterocyclyl, aliph. hydrocarbyl, characteristic group, H]. The compn. showed high sensitivity to both deep UV and ionization radiation and was alkali-developable.
- IT 32527-15-4 73130-96-8 120551-36-2
 149873-13-2
 (photo acid generator in deep UV sensitive alkali-developable
 photoresist compn.)
- RN 32527-15-4 HCA
 CN 2,4-Hexadiyne-1,6-diol, bis(4-methylbenzenesulfonate) (9CI) (CA
 INDEX NAME)

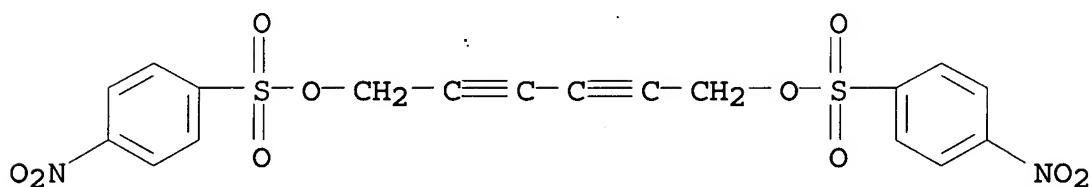


- RN 73130-96-8 HCA
 CN 2,4-Hexadiyne-1,6-diol, dibenzenesulfonate (9CI) (CA INDEX NAME)



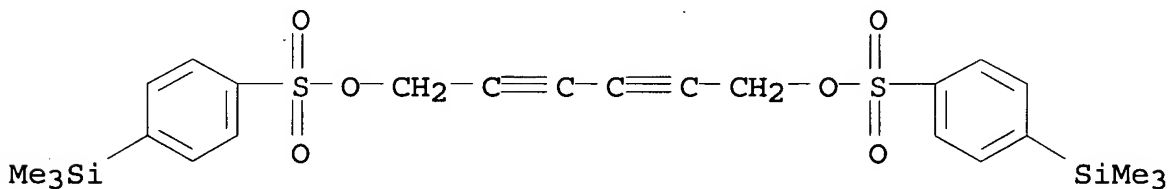
RN 120551-36-2 HCA

CN Benzenesulfonic acid, 4-nitro-, 2,4-hexadiyne-1,6-diyl ester (9CI)
(CA INDEX NAME)



RN 149873-13-2 HCA

CN Benzenesulfonic acid, 4-(trimethylsilyl)-, 2,4-hexadiyne-1,6-diyl ester (9CI) (CA INDEX NAME)



IC ICM G03F007-039

ICS C08K005-42; C08L101-00; G03F007-004; H01L021-312

CC 74-5 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)

Section cross-reference(s): 76

IT 32527-15-4 73130-96-8 120551-36-2

149873-03-0 149873-13-2 159103-08-9 159103-09-0

159103-10-3

(photo acid generator in deep UV sensitive alkali-developable photoresist compn.)

L54 ANSWER 4 OF 8 HCA COPYRIGHT 2007 ACS on STN

101:131254 Photoinitiated **degradation** of poly(diacetylene)s in **solution** by random chain scission. Mueller, Michael A.; Wegner, Gerhard (Inst. Makromol. Chem., Univ. Freiburg, Freiburg/Br., D-7800, Fed. Rep. Ger.). Makromolekulare Chemie,

185(8), 1727-37 (English) 1984. CODEN: MACEAK. ISSN: 0025-116X.

AB Poly(diacetylene)s **dissolved** in common org. **solvents** undergo random chain scission, if irradiated by UV-light. The pure polymers and their **solns.** are, however, stable, if they are photoirradiated within the main-absorption band of the polymer backbone. The usual triplet sensitizers, esp. in the presence of O, and radical donors such as 2,2'-azoisobutyronitrile (AIBN) enhance the rate of photodegrdn. Suitable dyes are able to sensitize the chain-scission in the visible region as well. Random chain scission occurs also in the dark, but only at temps. above room temp. and is enhanced by the addn. of radical-donors, e.g. AIBN. A mechanism of chain scission, induced by the attack of a radical to a multiple bond of the polyconjugated backbone of the polymer is proposed.

IT 81723-80-0

(degrdn. of **solns.** of, photoinitiated, by random chain scission)

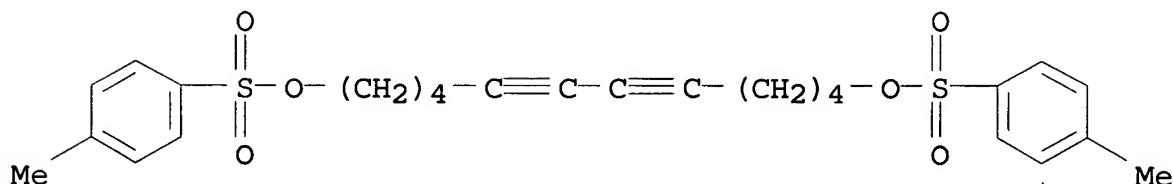
RN 81723-80-0 HCA

CN 5,7-Dodecadiyne-1,12-diol, bis(4-methylbenzenesulfonate), homopolymer (9CI) (CA INDEX NAME)

CM 1

CRN 81720-76-5

CMF C26 H30 O6 S2



CC 35-8 (Chemistry of Synthetic High Polymers)

ST polyacetylene **soln** photoinitiated degrdn

IT Polyacetylenes

(di-, degrdn. of **solns.** of, photoinitiated, by random chain scission)

IT Polymer **degradation**

(photoinitiated, of poly(diacetylenes) in **soln.** by random chain scission)

IT 81723-80-0 91490-81-2 92004-29-0 92049-74-6

(degrdn. of **solns.** of, photoinitiated, by random chain scission)

L54 ANSWER 5 OF 8 HCA COPYRIGHT 2007 ACS on STN

100:157239 Structure of poly(diacetylenes) in **solution.** Wenz,

Gerhard; Mueller, Michael A.; Schmidt, Manfred; Wegner, Gerhard (Inst. Makromol. Chem., Univ. Freiburg, Freiburg/Br., D-7800, Fed. Rep. Ger.). Macromolecules, 17(4), 837-50 (English) 1984. CODEN: MAMOBX. ISSN: 0024-9297.

AB The electronic and resonance Raman spectra and ^{13}C -NMR of poly(5,7-dodecadiyne-1,12-diol di-p-toluenesulfonate) [89163-41-7] and poly[4,6-decadiyne-1,10-diol bis[(butoxycarbonyl)methyl urethane]] (I) [89163-42-8] were compared with those of model compds. representing backbone segments of effective conjugation length (neff) decoupled from other segments electronically by bond rotation. The 3 methods gave the same value for neff. Light scattering and viscometry indicated that the polymers behaved as worklike chains. The persistence length of I was 15-20 nm, corresponding to 30-40 constitutive units. The transition of I from yellow (mol. dispersed wormlike coil) to blue, caused by changing temp. or solvent quality, results from aggregation rather than a nonplanar-planar transition.

IT 89163-41-7 89163-42-8
(soln. properties of, structure and spectra in relation to)

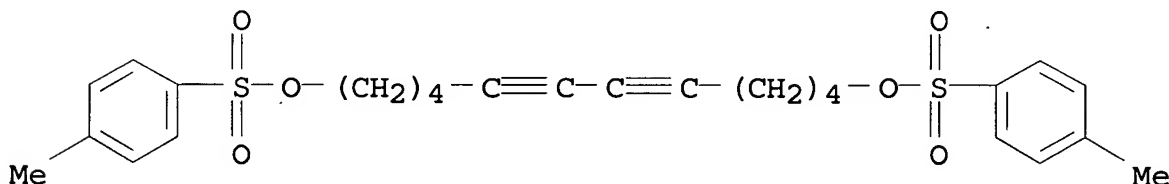
RN 89163-41-7 HCA

CN 5,7-Dodecadiyne-1,12-diol, bis(4-methylbenzenesulfonate), homopolymer, (all-E)- (9CI) (CA INDEX NAME)

CM 1

CRN 81720-76-5

CMF C26 H30 O6 S2



RN 89163-42-8 HCA

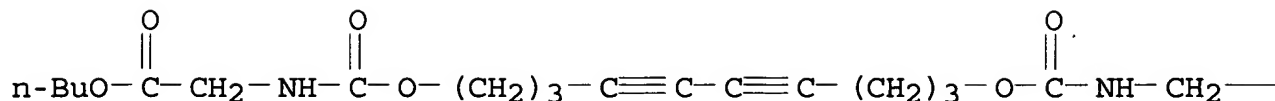
CN 5,16-Dioxa-3,18-diazaeicosa-9,11-diynedioic acid, 4,17-dioxo-, dibutyl ester, homopolymer, (all-E)- (9CI) (CA INDEX NAME)

CM 1

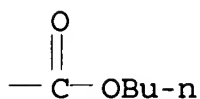
CRN 68777-86-6

CMF C24 H36 N2 O8

PAGE 1-A



PAGE 1-B



- CC 36-2 (Physical Properties of Synthetic High Polymers)
Section cross-reference(s): 73
- ST structure polydiyne **soln** property; polydiacetylene
soln structure property; dodecadiynediol tosylate polymer
structure; decadiynediol urethane polymer structure; Raman spectrum
polydiyne structure; UV spectrum polydiyne structure; NMR diyne
polymer structure; light scattering polydiyne structure; viscosity
polydiyne **soln** structure
- IT Agglomeration
(of decadiynediol urethane polymer **solns.**, color change
in relation to)
- IT Raman spectra
(of polydiacetylenes, structure and **soln.** properties in
relation to)
- IT Light
(scattering of, by diacetylene polymer **solns.**,
structure in relation to)
- IT Polyacetylenes
(**soln.** properties of, structure and spectra in relation
to)
- IT Viscosity
(structure in relation to, of diacetylene polymer **solns**
.)
- IT Polymer degradation
(photochem., of polydiacetylenes, structure and **soln.**
properties in relation to)
- IT 68810-64-0 89105-99-7 89163-41-7 89163-42-8
(**soln.** properties of, structure and spectra in relation
to)

L54 ANSWER 6 OF 8 HCA COPYRIGHT 2007 ACS on STN
99:114483 Electrically conductive polydiacetylenes. (Agency of
Industrial Sciences and Technology, Japan). Jpn. Kokai Tokkyo Koho

JP 58047009 A 19830318 Showa, 4 pp. (Japanese). CODEN: JKXXAF.
APPLICATION: JP 1981-145743 19810916.

AB Elec. conductive polydiacetylenes are prepd. by polymg. a diacetylene in the presence of an electron donating or accepting doping agent. Thus, 836 mg powd. 2,4-hexadiinediol p-toluenesulfonate ester (I) and 900 mg I were placed in a evacuated sealed tube each at sep. positions and kept at 60° for 48 h. The ester was polymd. in the I gas atm. to form a black powd. polymer (**decomp.** temp. .apprx.210°; insol. in **solvents**), with 10.2% wt. increase. The powder was press-formed and had an elec. cond. of $2.3 + 10^{-5} \Omega^{-1} \text{cm}^{-1}$ at 25° in an Ar stream. Similarly, I with AgClO₄, 1,6-di(N-carbazoyl)-2,4-hexadiene with I, and 2,4-hexadiene-1,6-diol-bisphenylurethane with I were polymd..

IT 32535-60-7

(elec. conductive compn. from)

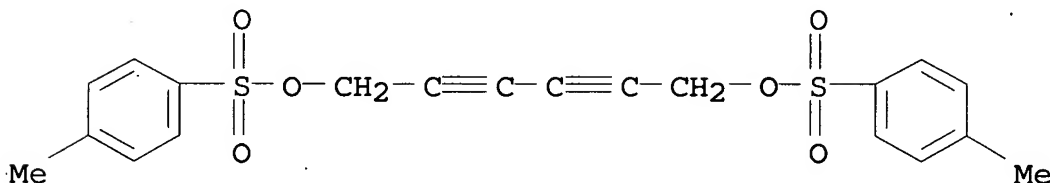
RN 32535-60-7 HCA

CN 2,4-Hexadiyne-1,6-diol, bis(4-methylbenzenesulfonate), homopolymer (9CI) (CA INDEX NAME)

CM 1

CRN 32527-15-4

CMF C20 H18 O6 S2



IC C08F038-00; C08F002-00; C08F002-44; H01B001-12

CC 76-2 (Electric Phenomena)

Section cross-reference(s): 37

IT 32535-60-7 87036-45-1 87036-47-3

(elec. conductive compn. from)

L54 ANSWER 7 OF 8 HCA COPYRIGHT 2007 ACS on STN

94:47950 Irradiation of a single crystalline and highly amorphous polydiacetylene. Patel, G. N. (Corp. Res. Cent., Allied Chem. Corp., Morristown, NJ, 07960, USA). Radiation Physics and Chemistry, 15(5), 637-41 (English) 1980. CODEN: RPCHDM. ISSN: 0146-5724.

AB The polydiacetylene $[:C(R)C.tplbond.C(R)C:]_n$ (I) [70221-28-2], where R is $-(CH_2)_3O_2CNHCH_2CO_2Bu$, is obtained as single crystals by the solid state polymn. of monomer single crystals and as an

amorphous material by pptg. I from its soln. The cryst. and the amorphous I samples were irradiated with γ -rays under identical conditions. The single cryst. I remains sol. after 50 Mrads while the amorphous I starts turning into a gel at 3 Mrads. The results demonstrate that 100% cryst. I is quite radiation resistant. The amorphous I can be converted into 100% gel, which indicates an absence of backbone-scission. The highly conjugated backbone of I does not undergo crosslinking. The crosslinking in the amorphous I occurs between the side groups.

IT 68777-87-7

(radiation resistance of, crystallinity in relation to)

RN 68777-87-7 HCA

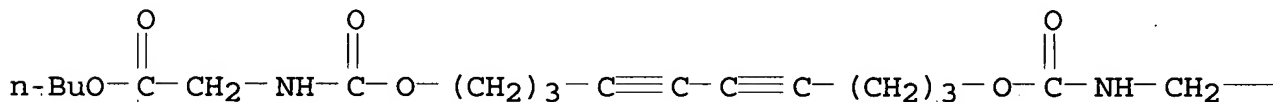
CN 5,16-Dioxa-3,18-diazaeicosa-9,11-diynedioic acid, 4,17-dioxo-, dibutyl ester, homopolymer (9CI) (CA INDEX NAME)

CM 1

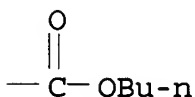
CRN 68777-86-6

CMF C24 H36 N2 O8

PAGE 1-A



PAGE 1-B



CC 35-6 (Synthetic High Polymers)

Section cross-reference(s): 71

IT Crosslinking

Polymer degradation

(radiochem., of polydiacetylenes, crystallinity in relation to)

IT 68777-87-7 70221-28-2

(radiation resistance of, crystallinity in relation to)

L54 ANSWER 8 OF 8 HCA COPYRIGHT 2007 ACS on STN

88:90314 Polymers as catalyst support: functionalizations and some properties of polydiacetylenes. Kiji, Jitsuo; Inaba, Mikio (Fac. Eng., Tottori Univ., Tottori, Japan). *Angewandte Makromolekulare Chemie* 65:237-41 (English) 1977. CODEN: ANMCBO. ISSN: 0003-3146.

AB Poly[1,4-bis(hydroxymethyl)-2-butyne-1,4-diylidene bis(p-toluenesulfonate)] (I) [32535-60-7] was treated with LiPPh₂ [65567-06-8] to form an amorphous, powd. polymer, which **decompd.** at 200-500° in N₂ due to **decompn.** of the bulky pendent groups. I was hydrolyzed in 40% KOH to form a black powder, which was treated with chlorodiphenylphosphine [1079-66-9] in the presence of Et₃N to form a brown powder contg. 2.5% P. Spin-labeling studies of I with 4-hydroxy-2,2,6,6-tetramethylpiperid-1-yloxy indicated that the choice of **solvent** did not affect the phys. or chem. behavior of the polymer-bound mols.

IT 32535-60-7D, hydrolyzed
(reaction of, with chlorodiphenylphosphine)

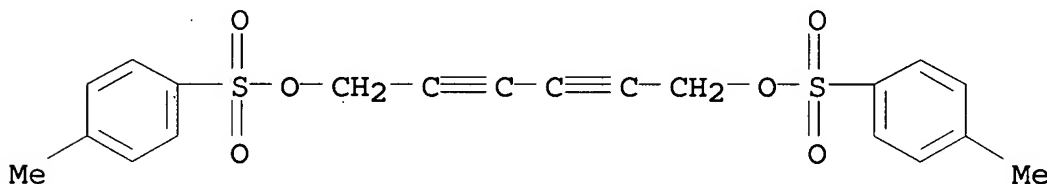
RN 32535-60-7 HCA

CN 2,4-Hexadiyne-1,6-diol, bis(4-methylbenzenesulfonate), homopolymer
(9CI) (CA INDEX NAME)

CM 1

CRN 32527-15-4

CMF C20 H18 O6 S2



IT 32535-60-7
(reactions and spin-labeling studies of)

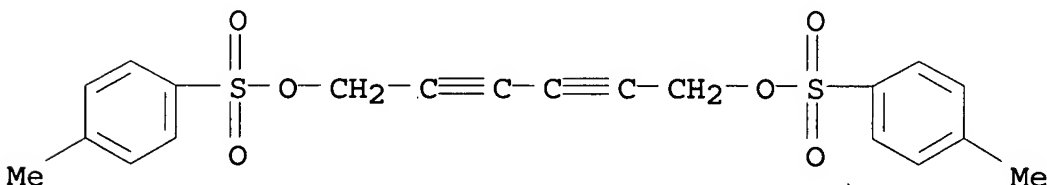
RN 32535-60-7 HCA

CN 2,4-Hexadiyne-1,6-diol, bis(4-methylbenzenesulfonate), homopolymer
(9CI) (CA INDEX NAME)

CM 1

CRN 32527-15-4

CMF C20 H18 O6 S2



CC 36-4 (Plastics Manufacture and Processing)
IT Chains, chemical
(flexibility of, of diacetylene polymers, **solvent**
effect on)
IT 32535-60-7D, hydrolyzed
(reaction of, with chlorodiphenylphosphine)
IT 32535-60-7
(reactions and spin-labeling studies of)

=> D L55 1-11 CBIB ABS HITSTR HITIND

L55 ANSWER 1 OF 11 HCA COPYRIGHT 2007 ACS on STN

146:82383 Ultrafast Optical Nonlinearity in Polydiacetylenes Studied by Sub-5-fs Laser. Kobayashi, Takayoshi; Ikuta, Mitsuhiro (Department of Physics, University of Tokyo, Bunkyo, Tokyo, Japan). Molecular Crystals and Liquid Crystals, 446, 193-207 (English) 2006. CODEN: MCLCD8. ISSN: 1542-1406. Publisher: Taylor & Francis, Inc..

AB Mol. vibration of several modes in blue-phase polydiacetylene-3-butoxycarbonylmethylurethane (PDA-3BCMU) was real-time obsd. by 5-fs pump-probe measurement. The contribution of the vibrational wavepackets in the ground state and in the excited state in the signal were sepd. by multichannel measurements The C=C stretching mode in the ground state starts to oscillate π -out-of-phase with the C=C stretching mode. The structure of PDA-3BCMU in the geometrically relaxed state is not pure butatriene-type but more like acetylene-type. The frequencies of C=C and C=C stretching modes there were detd. by singular value **decompn.** method to be 1472 ± 6 cm⁻¹ and 2092 ± 6 cm⁻¹, resp. The double and triple bond stretching frequencies in the ground state which are 1463 ± 6 cm⁻¹ and 2083 ± 6 cm⁻¹, resp.

IT 68777-87-7
(ultrafast optical nonlinearity in polydiacetylenes studied by sub-5-fs laser)

RN 68777-87-7 HCA

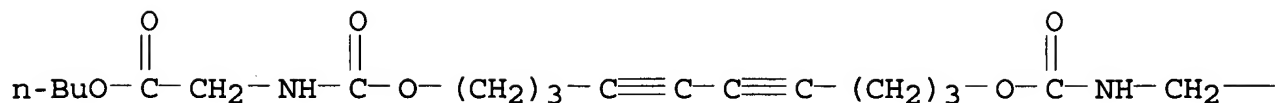
CN 5,16-Dioxa-3,18-diazaeicosa-9,11-diynedioic acid, 4,17-dioxo-, dibutyl ester, homopolymer (9CI) (CA INDEX NAME)

CM 1

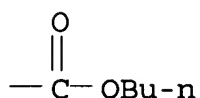
CRN 68777-86-6

CMF C24 H36 N2 O8

PAGE 1-A



PAGE 1-B



CC 36-5 (Physical Properties of Synthetic High Polymers)

Section cross-reference(s): 73

IT 68777-87-7

(ultrafast optical nonlinearity in polydiacetylenes studied by sub-5-fs laser)

L55 ANSWER 2 OF 11 HCA COPYRIGHT 2007 ACS on STN

145:315447 Phase analysis of vibrational wavepackets in the ground and the excited states in polydiacetylene. Kobayashi, Takayoshi; Ikuta, Mitsuhiro (Department of Physics, Graduate School of Science, University of Tokyo, 7-3-1 Hongo, Bunkyo-ku, Tokyo, 113-0033, Japan). Nonlinear Optics, Quantum Optics, 34(1-4), 1-7 (English) 2005. CODEN: NOQOAP. ISSN: 1543-0537. Publisher: Old City Publishing, Inc..

AB Mol. vibration of several modes in blue-phase polydiacetylene-3-butoxycarbonylmethylurethane (PDA-3BCMU) was real-time obsd. by 5-fs pump-probe measurement. The contribution of the vibrational wavepackets in the ground state and in the excited state in the signal were sepd. by multichannel measurement. The C=C stretching mode in the ground state starts to oscillate π -out-of-phase with the C \equiv C stretching mode. The structure of PDA-3BCMU in the geometrically relaxed state is not pure butatriene-type but more like acetylene-type. The frequencies of C=C and C \equiv C stretching modes there were detd. by singular value decompn. method to be 1472 ± 6 cm⁻¹ and 2092 ± 6 cm⁻¹, resp. The double and triple bond stretching frequencies in the ground state were detd. to be 1463 ± 6 cm⁻¹ and 2083 ± 6 cm⁻¹, resp.

IT 68777-87-7, 3BCMU homopolymer

(phase anal. of vibrational wavepackets in ground and the excited states in polydiacetylene)

RN 68777-87-7 HCA

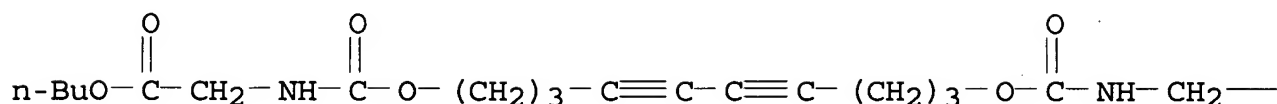
CN 5,16-Dioxa-3,18-diazaeicosa-9,11-diynedioic acid, 4,17-dioxo-, dibutyl ester, homopolymer (9CI) (CA INDEX NAME)

CM 1

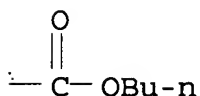
CRN 68777-86-6

CMF C24 H36 N2 O8

PAGE 1-A



PAGE 1-B



CC 36-3 (Physical Properties of Synthetic High Polymers)

IT 68777-87-7, 3BCMU homopolymer 70221-28-2, 3BCMU

homopolymer, sru

(phase anal. of vibrational wavepackets in ground and the excited states in polydiacetylene)

L55 ANSWER 3 OF 11 HCA COPYRIGHT 2007 ACS on STN

143:375575 Sub-5-fs resolved nonlinear optical processes in polydiacetylene. Kobayashi, Takayoshi; Ikuta, Mitsuhiro; Yuasa, Yoshiharu (Department of physics, Graduate School of Science, Univ. of Tokyo, 7-3-1 Hongo, Bunkyo-ku, Tokyo, 113-0033, Japan).

Proceedings of SPIE-The International Society for Optical Engineering, 5646(Nonlinear Optical Phenomena and Applications), 212-223 (English) 2005. CODEN: PSISDG. ISSN: 0277-786X.

Publisher: SPIE-The International Society for Optical Engineering.

AB Mol. vibration of several modes in blue-phase polydiacetylene-3-butoxycarbonylmethylurethane (PDA-3BCMU) was real-time obsd. by 5-fs pump-probe measurement. The contribution of the vibrational wavepackets in the ground state and in the ground state and in the excited state in the signal were sepd. by multi-channel measurement. The C=C stretching mode in the ground state starts to oscillate π -out-of-phase with the C \equiv C stretching mode. The structure of PDA-3BCMU in the geometrically relaxed state is not pure butatriene-type but more like acetylene-type. The frequencies of C=C and C \equiv C stretching modes there were detd. by singular value **decompn.** method to be 1472 ± 6 cm⁻¹ and 2092 ± 6 cm⁻¹, resp. The double and triple bond stretching frequencies in

the ground state which are $1463 \pm 6 \text{ cm}^{-1}$ $2083 \pm 6 \text{ cm}^{-1}$, resp.

IT 68777-87-7

(sub-5-fs resolved nonlinear optical processes in
polydiacetylene)

RN 68777-87-7 HCA

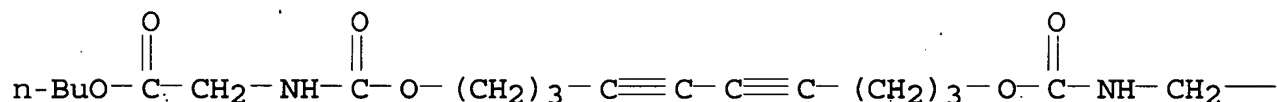
CN 5,16-Dioxa-3,18-diazaeicosa-9,11-diynedioic acid, 4,17-dioxo-,
dibutyl ester, homopolymer (9CI) (CA INDEX NAME)

CM 1

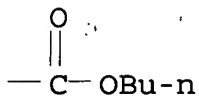
CRN 68777-86-6

CMF C24 H36 N2 O8

PAGE 1-A



PAGE 1-B



CC 73-10 (Optical, Electron, and Mass Spectroscopy and Other Related
Properties)

Section cross-reference(s): 36

IT 27987-87-7 68777-87-7

(sub-5-fs resolved nonlinear optical processes in
polydiacetylene)

L55 ANSWER 4 OF 11 HCA COPYRIGHT 2007 ACS on STN

143:294910 Real-time spectroscopy to clarify the mechanism of ultrafast
nonlinearity. Kobayashi, Takayoshi; Ikuta, Mitsuhiro (Dep. Phys.,
Grad. Sch. Sci., Univ. of Tokyo, Tokyo, 113-0033, Japan).
Proceedings of SPIE-The International Society for Optical
Engineering, 5724 (Organic Photonic Materials and Devices VII),
242-258 (English) 2005. CODEN: PSISDG. ISSN: 0277-786X.

AB In order to clarify the mechanism of ultrafast optical nonlinearity
in polymer esp. polydiacetylene real-time measurement of mol.
vibration which can provide information of time-resolved structural
changes assocd. with huge electronic spectral change was performed.
Mol. vibration of several modes in blue-phase polydiacetylene-3-

butoxycarbonylmethylurethane (PDA-3BCMU) was time resolved by 5-fs pump-probe measurement. The contributions of the vibrational wavepackets in the ground state and in the excited state in the signal were sepd. by multi-channel measurement. The C=C stretching mode in the ground state starts to oscillate π -out-of-phase with the C C stretching mode. The structure of PDA-3BCMU in the geometrically relaxed state is not pure butatriene-type but more like acetylene-type. The frequencies of C=C and C C stretching modes there were detd. by singular value **decompn.** method to be 1472 ± 6 cm⁻¹ and 2092 ± 6 cm⁻¹, resp. The double and triple bond stretching frequencies in the ground state which are 1463 ± 6 cm⁻¹ and 2083 ± 6 cm⁻¹, resp. Frequencies of both modes are increased in the configuration after the geometrical relaxation after the generation in the excited state upon excitation.

IT 68777-87-7

(real-time measurement of mol. vibration providing information of time-resolved structural changes for clarifying mechanism of ultrafast optical nonlinearity in polymer)

RN 68777-87-7 HCA

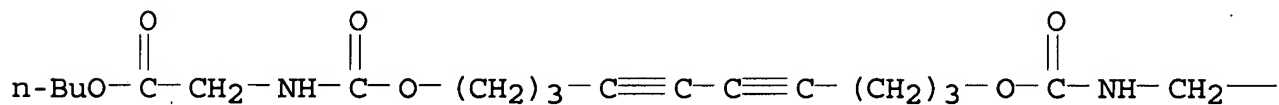
CN 5,16-Dioxa-3,18-diazaeicosa-9,11-diynedioic acid, 4,17-dioxo-, dibutyl ester, homopolymer (9CI) (CA INDEX NAME)

CM 1

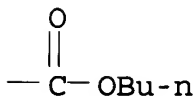
CRN 68777-86-6

CMF C24 H36 N2 O8

PAGE 1-A



PAGE 1-B



CC 73-10 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)

IT 27987-87-7, Polydiacetylene 68777-87-7

(real-time measurement of mol. vibration providing information of time-resolved structural changes for clarifying mechanism of

ultrafast optical nonlinearity in polymer)

L55 ANSWER 5 OF 11 HCA COPYRIGHT 2007 ACS on STN

142:287094 Phase analysis of vibrational wave packets in the ground and excited states in polydiacetylene. Ikuta, Mitsuhiro; Yuasa, Yoshiharu; Kimura, Tatsumi; Matsuda, Hiroo; Kobayashi, Takayoshi (Department of Physics, Graduate School of Science, University of Tokyo, Bunkyo-ku, Tokyo, 113-0033, Japan). Physical Review B: Condensed Matter and Materials Physics, 70(21), 214301/1-214301/6 (English) 2004. CODEN: PRBMDO. ISSN: 1098-0121. Publisher: American Physical Society.

AB Mol. vibration of several modes in blue-phase polydiacetylene-3-butoxycarbonylmethylurethane (PDA-3BCMU) was real-time obsd. by 5-fs pump-probe measurement. The contribution of the vibrational wave packets in the ground state and in the excited state in the signal were sepd. by multichannel measurement. The C=C stretching mode in the ground state starts to oscillate π -out-of-phase with the C.tplbond.C stretching mode. The structure of PDA-3BCMU in the geometrically relaxed state is not pure butatriene type but more like acetylene type. The frequencies of C=C and C.tplbond.C stretching modes there were detd. by singular value decompn . method to be 1472 ± 6 cm⁻¹ and 2092 ± 6 cm⁻¹, resp. The double and triple bond stretching frequencies in the ground state are 1463 ± 6 cm⁻¹ and 2083 ± 6 cm⁻¹, resp.

IT 68777-87-7

(phase anal. of vibrational wave packets in ground and excited states in polydiacetylene)

RN 68777-87-7 HCA

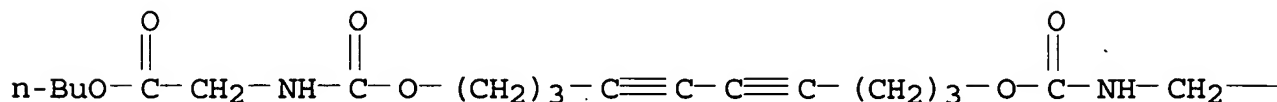
CN 5,16-Dioxa-3,18-diazaeicosa-9,11-diynedioic acid, 4,17-dioxo-, dibutyl ester, homopolymer (9CI) (CA INDEX NAME)

CM 1

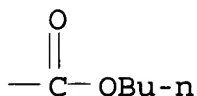
CRN 68777-86-6

CMF C24 H36 N2 O8

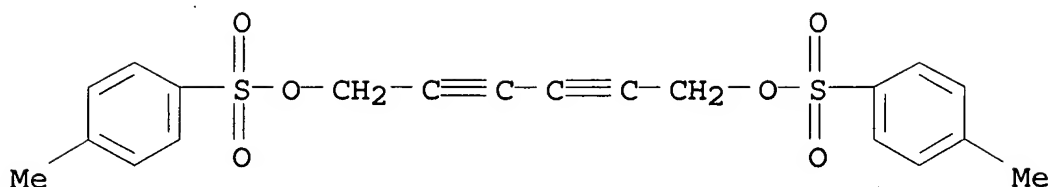
PAGE 1-A



PAGE 1-B



- CC 73-3 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)
Section cross-reference(s): 36
- IT 68777-87-7 70221-28-2
(phase anal. of vibrational wave packets in ground and excited states in polydiacetylene)
- L55 ANSWER 6 OF 11 HCA COPYRIGHT 2007 ACS on STN
122:93093 Layer-by-layer growth and **decomposition** of an organic crystal observed in real time by atomic force microscopy. Schimmel, Thomas; Winzer, Bettina; Kemnitz, Rainer; Koch, Thomas; Kueppers, Juergen; Schwoerer, Markus (Universitat Bayreuth, Bayreuth, D-95440, Germany). Advanced Materials (Weinheim, Germany), 6(4), 307-11 (English) 1994. CODEN: ADVMEW. ISSN: 0935-9648.
- AB The authors report the 1st observation of in-situ layer-by-layer growth of an org. crystal by at. force microscopy. A new exptl. technique was demonstrated for inducing and studying crystal growth locally with the AFM tip. The method uses the tip as a nano-tool, which detaches and provides mols. locally for controlled growth expts. It allows quant. studies of phenomena connected with crystal growth in real time and on a mol. scale. Layer growth, **decompn.** and nucleation were studied on single crystals of the org. mol. TS-6. The growth rate could be varied in a defined manner between <2 nm and >100 nm per scan by varying the force. A mechanism for **decompn.**, mol. transport and layer growth was suggested and a quant. evaluation yielded stability conditions for nucleating islands. As the exptl. technique presented in this article does not require conducting samples or electrochem. processes and is not based on special sample properties, it should also be applicable to the study of processes of crystal growth on other mol. crystals.
- IT 32527-15-4, TS-6
(layer-by-layer growth and **decompn.** of org. crystal obsd. in real time by at. force microscopy)
- RN 32527-15-4 HCA
- CN 2,4-Hexadiyne-1,6-diol, bis(4-methylbenzenesulfonate) (9CI) (CA INDEX NAME)



CC 75-1 (Crystallography and Liquid Crystals)
 ST layer growth **decompn** TS6 crystal AFM
 IT 32527-15-4, TS-6
 (layer-by-layer growth and **decompn.** of org. crystal
 obsd. in real time by at. force microscopy)

L55 ANSWER 7 OF 11 HCA COPYRIGHT 2007 ACS on STN

119:226899 Positron annihilation detection of ultra-violet light-induced damage in conjugated polymers. Lim, K. C.; Huang, W. F. (Hughes Res. Lab., Malibu, CA, 90265, USA). Solid State Communications, 87(9), 771-4 (English) 1993. CODEN: SSCO44. ISSN: 0038-1098.

AB The Doppler-broadened positron annihilation radiation lineshape S-parameter, and the optical absorption spectra were measured during UV exposure to a polydiacetylene (p-4BCMU, I) which **degraded**, and a polyquinoline (PQ) which did not **degrade**, when exposed to UV light. The S-parameter of I increased during photodegrdn. and correlated closely to the change of optical absorption spectra. The S-parameter of a PQ remained unchanged.

IT 68777-93-5
 (UV radiation-induced damage of, positron annihilation detection of)

RN 68777-93-5 HCA

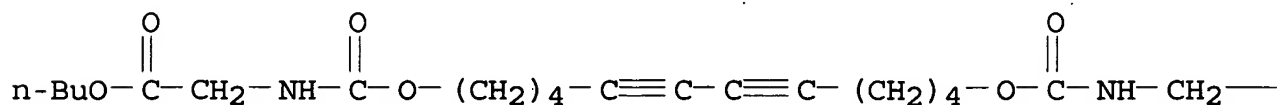
CN 5,18-Dioxa-3,20-diazadocosa-10,12-diynedioic acid, 4,19-dioxo-, dibutyl ester, homopolymer (9CI) (CA INDEX NAME)

CM 1

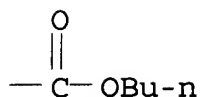
CRN 68777-92-4

CMF C26 H40 N2 O8

PAGE 1-A



PAGE 1-B



CC 36-5 (Physical Properties of Synthetic High Polymers)

Section cross-reference(s): 25

IT Polymer **degradation**

(photochem., of polydiacetylene, UV-induced, positron annihilation detection of damages in)

IT 68777-93-5 76135-61-0

(UV radiation-induced damage of, positron annihilation detection of)

L55 ANSWER 8 OF 11 HCA COPYRIGHT 2007 ACS on STN

115:218081 Measurement of ultrafast optical nonlinearities using a modified Sagnac interferometer. Gabriel, M. C.; Whitaker, N. A., Jr.; Dirk, C. W.; Kuzyk, M. G.; Thakur, M. (AT and T Bell Lab., Holmdel, NJ, 07733, USA). Optics Letters, 16(17), 1334-6 (English) 1991. CODEN: OPLEDP. ISSN: 0146-9592.

AB A method for the measurement of fast, intensity-dependent refractive-index changes with the use of a modified Sagnac ring interferometer is presented. The measurement is not **degraded** by slowly responding background index changes. Nonlinear refractive-index changes in an undoped Si wafer, and in poly-bis toluene sulfonate polydiacetylene and dye-doped poly(Me methacrylate) waveguides, were measured with the use of a cw mode-locked Nd:YAG laser.

IT 32535-60-7

(nonlinear refractive index change detn. in optical waveguide contg.)

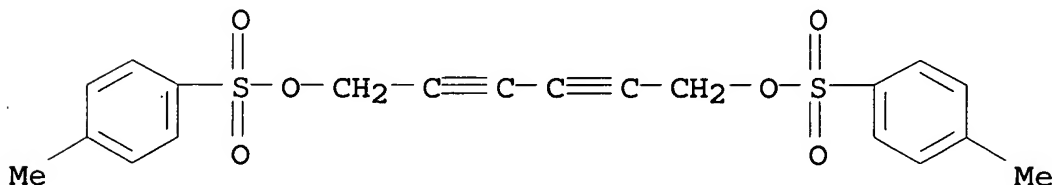
RN 32535-60-7 HCA

CN 2,4-Hexadiyne-1,6-diol, bis(4-methylbenzenesulfonate), homopolymer (9CI) (CA INDEX NAME)

CM 1

CRN 32527-15-4

CMF C20 H18 O6 S2



CC 73-10 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)

IT 32535-60-7

(nonlinear refractive index change detn. in optical waveguide contg.)

L55 ANSWER 9 OF 11 HCA COPYRIGHT 2007 ACS on STN

112:8023 Photooxidation of poly(diacetylene) single crystals. Poole, Nicholas J.; Day, Richard J.; Smith, Brian J. E.; Batchelder, David N.; Bloor, David (Dep. Electr. Electron. Eng., Polytech. Wales, Pontypridd, CF37 1DL, UK). Makromolekulare Chemie, 190(11), 2909-19 (English) 1989. CODEN: MACEAK. ISSN: 0025-116X.

AB Single crystals of a poly(diacetylene) with p-tosyloxymethyl side groups underwent photooxidn. when irradiated with visible light of wavelength ≤ 520 nm. The presence of mol. O adsorbed on the surface of the crystals and its subsequent photochem. reaction with the polymer were monitored using resonance Raman spectroscopy and the formation of holog. gratings. Reaction products which were identified included hydroperoxy groups, p-toluenesulfonic acid and poly(diacetylene) oligomers. The photooxidn. reaction appeared to proceed by the "ene" mechanism; the polymer reacted with singlet O produced by energy transfer with the photoexcited poly(diacetylene) backbone.

IT 32535-60-7

(photooxidn. of single crystals of, mechanism of)

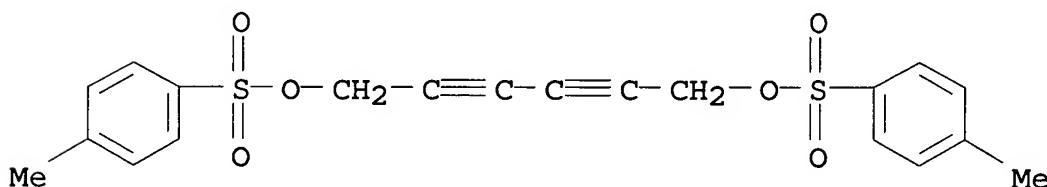
RN 32535-60-7 HCA

CN 2,4-Hexadiyne-1,6-diol, bis(4-methylbenzenesulfonate), homopolymer (9CI) (CA INDEX NAME)

CM 1

CRN 32527-15-4

CMF C20 H18 O6 S2



CC 35-8 (Chemistry of Synthetic High Polymers)

IT Polymer degradation

(oxidative, photochem., of polydiacetylenes contg. toluenesulfonate groups, mechanism of)

IT 32535-60-7 51853-07-7

(photooxidn. of single crystals of, mechanism of)

L55. ANSWER 10 OF 11 HCA COPYRIGHT 2007 ACS on STN

100:86240 Radiation damage and high resolution electron microscopy of polydiacetylene crystals. Read, R. T.; Young, R. J. (Dep. Mat., Queen Mary Coll., London, E1 4NS, UK). Journal of Materials Science, 19(1), 327-38 (English) 1984. CODEN: JMTSAS. ISSN: 0022-2461.

AB The electron-beam irradiation damage of polydiacetylene single crystals occurred by the decay of electron-diffraction patterns and the loss of contrast in bright- and dark-field micrographs. The rate of damage was different for the 2 polydiacetylene derivs. studied with damage occurring probably by crosslinking. Lattice images from the planes parallel to the chain direction with a spacing of 0.9 ± 0.1 nm were obtained from the most resistant deriv. Images of chain-end dislocations were obtained in a polymer crystal. Problems of applying high-resoln. electron microscopy to polymers and the conditions for imaging individual mols. were discussed.

IT 32535-60-7

(electron-beam irradiation damage of single crystals of, detn. of, by high-resoln. electron microscopy)

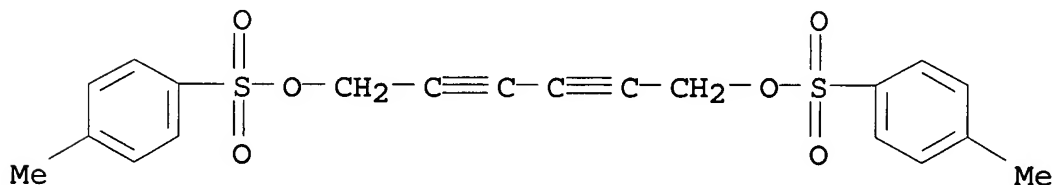
RN 32535-60-7 HCA

CN 2,4-Hexadiyne-1,6-diol, bis(4-methylbenzenesulfonate), homopolymer (9CI) (CA INDEX NAME)

CM 1

CRN 32527-15-4

CMF C20 H18 O6 S2



CC 35-8 (Chemistry of Synthetic High Polymers)

IT Polymer degradation

(radiochem., of polydiacetylene single crystals, detn. of, by high-resoln. electron microscopy)

IT 32535-60-7 61614-97-9 65461-63-4 74977-07-4

(electron-beam irradiation damage of single crystals of, detn. of, by high-resoln. electron microscopy)

L55 ANSWER 11 OF 11 HCA COPYRIGHT 2007 ACS on STN

84:44744 Solid-state thermal polymerization of bis (p-toluene sulfonate)

of 2,4-hexadiyne-1,6-diol. III. ESR study. Stevens, G. C.; Bloor, D. (Dep. Phys., Queen Mary Coll., London, UK). Journal of Polymer Science, Polymer Physics Edition, 13(12), 2411-27 (English) 1975. CODEN: JPLPAY. ISSN: 0098-1273.

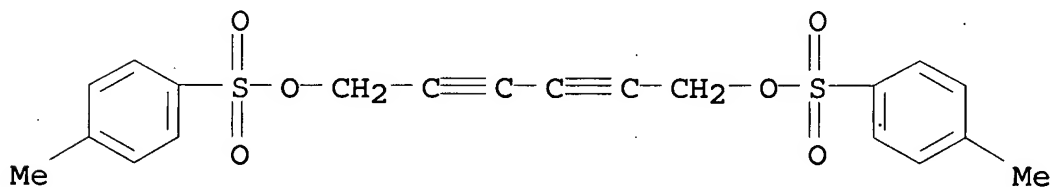
AB The ESR data obtained during polymn. of 2,4-hexadiyne-1,6-diol bis(p-toluenesulfonate) [32527-15-4] at 60, 70, and 80° showed a weak paramagnetism in polycryst. samples, which was attributed to departures of the polymer chair from equil. conformation. **Decompn.** occurred at 70 and 80°C during the final polymn. phase, producing addnl. paramagnetic centers. Fine shape parameters measured during polymn. showed changes which were attributed to changes in delocalization and mobility of the paramagnetic center. The paramagnetism was attributed to a chain defect property characteristic of interband electric states close to the valence band.

IT 32527-15-4

(polymn. of, ESR spectra during solid state)

RN 32527-15-4 HCA

CN 2,4-Hexadiyne-1,6-diol, bis(4-methylbenzenesulfonate) (9CI) (CA INDEX NAME)



CC 35-3 (Synthetic High Polymers)

IT 32527-15-4

(polymn. of, ESR spectra during solid state)

=> D HIS L56-

FILE 'HCA'

L56 305324 S DEGRDN#
 L57 2 S L23 AND L56
 L58 22 S L24 AND L56
 L59 12 S (L57 OR L58) NOT (L41 OR L54 OR L55)
 L60 1 S L59 AND (L50 OR L52)
 L61 12 S L59 OR L60

=> D L61 1-12 CBIB ABS HITSTR HITIND

L61 ANSWER 1 OF 12 HCA COPYRIGHT 2007 ACS on STN

136:218396 Raman-active taggants and their recognition. Shchegolikhin, Alexander Nikitovich; Lazareva, Olga Leonidovna; Melnikov, Valery Pavlovich; Ozeretski, Vassili Yu; Small, Lyle David (Russia). U.S. Pat. Appl. Publ. US 2002025490 A1 20020228, 94 pp. (English). CODEN: USXXCO. APPLICATION: US 2001-833218 20010411. PRIORITY: US 2000-196876P 20000412.

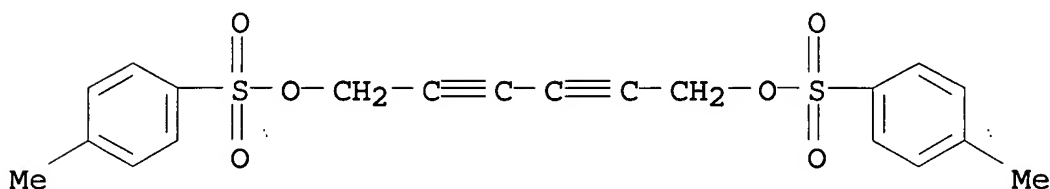
AB Org. or organoelement (un)branched monomeric or polymeric compns. comprising a Raman-active compd. in the form of particles whose max. dimension is 50 μm which are applied to or compatibilized with a substrate are described for which the compds. have the characteristic that, when the Raman-active compd. applied to a substrate is then exposed to a laser light wavelength which is bathochromically shifted well beyond a spectral region of max. absorbance of the Raman-active compd., at any incident intensity of the laser light >1.0 mW but lower than that capable of inducing photothermal **degrdn.** of the Raman-active compd. or the substrate, Raman scattering can be detected in a 2300-1900 cm^{-1} Raman shifts region at a level of at least 0.001 fW above an intensity of a background signal of the substrate. Flowable or solid compns. comprising the compns. described above are also described. Methods of security marking are described which entail applying to a genuine item a marking compn. comprising the Raman-active compns., to form a machine-readable security mark on the genuine item (e.g., by printing using an ink-jet printer); illuminating the security mark on the genuine item with monochromatic near IR radiation; and quant. measuring with a spectrometer a spectrum of Raman scattered radiation from the Raman-active compn. while the security mark is illuminated with monochromatic near IR radiation. Methods of security marking are also described which entail applying to a genuine item a marking compn. comprising an fluorescence-active compn. incorporating a near IR-stimulable inorg. anti-Stokes up-converting phosphor which generates a detectable composite emission spectrum, thereby forming a machine-readable security mark on the genuine item; illuminating the security mark on the genuine item with monochromatic near IR radiation; and simultaneously and quant. measuring with a spectrometer the composite emission spectrum of Raman scattered radiation and of laser induced fluorescence from the fluorescence-active compn. while the security mark is illuminated with monochromatic near IR radiation. Raman-active security marks, including marks which are thermochromic, pH-chromic, piezochromic, or solvatochromic, are also described.

IT 32527-15-4P, 2,4-Hexadiyne-1,6-diol bis-p-toluene sulfonate
68777-92-4P

(Raman-active taggants and their recognition)

RN 32527-15-4 HCA

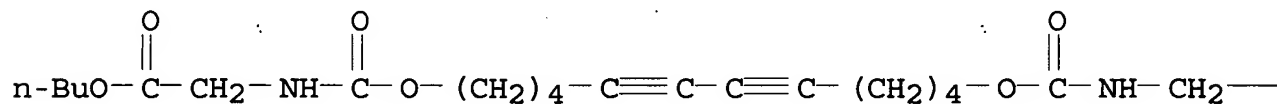
CN 2,4-Hexadiyne-1,6-diol, bis(4-methylbenzenesulfonate) (9CI) (CA INDEX NAME)



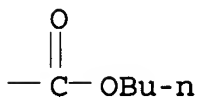
RN 68777-92-4 HCA

CN 5,18-Dioxa-3,20-diazadocosa-10,12-diynedioic acid, 4,19-dioxo-, dibutyl ester (9CI) (CA INDEX NAME)

PAGE 1-A



PAGE 1-B



IT 32535-60-7P, 2,4-Hexadiyne-1,6-diol bis-p-toluene sulfonate homopolymer 68777-93-5P
(Raman-active taggants and their recognition)

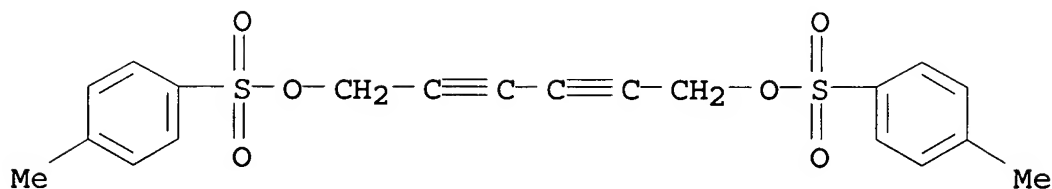
RN 32535-60-7 HCA

CN 2,4-Hexadiyne-1,6-diol, bis(4-methylbenzenesulfonate), homopolymer (9CI) (CA INDEX NAME)

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CRN 32527-15-4

CMF C20 H18 O6 S2



RN 68777-93-5 HCA

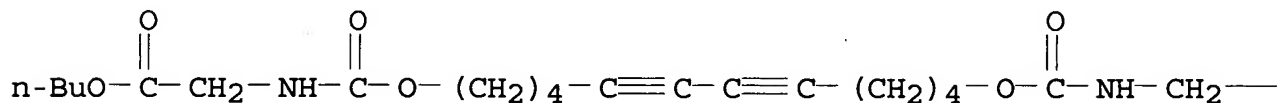
CN 5,18-Dioxa-3,20-diazadocosa-10,12-diynedioic acid, 4,19-dioxo-,
dibutyl ester, homopolymer (9CI) (CA INDEX NAME)

CM 1

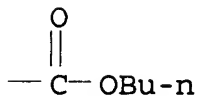
CRN 68777-92-4

CMF C26 H40 N2 O8

PAGE 1-A



PAGE 1-B



IC ICM G11B007-24

INCL 430270150; X43-027.011; X43-027.014; X43-094.5; X28-3 9.0

CC 42-6 (Coatings, Inks, and Related Products)

Section cross-reference(s): 73

IT 3031-68-3P, 2,4-Hexadiyne-1,6-diol **32527-15-4P**,
2,4-Hexadiyne-1,6-diol bis-p-toluene sulfonate **68777-92-4P**
74602-32-7P, 5,7-Dodecadiyne-1,12-diol 260562-19-4P 401950-22-9P
401950-23-0P

(Raman-active taggants and their recognition)

IT 17061-85-7P, 4-Nitrophenyl propargyl ether **32535-60-7P**,
2,4-Hexadiyne-1,6-diol bis-p-toluene sulfonate homopolymer
68777-93-5P 75651-60-4P 76135-61-0P 106877-52-5P
127424-89-9P 133885-84-4P 135256-13-2P 360554-41-2P

(Raman-active taggants and their recognition)

L61 ANSWER 2 OF 12 HCA COPYRIGHT 2007 ACS on STN

116:130224 Conjugated polymers as materials for nonlinear optical devices. Baker, G. L. (Bellcore, Red Bank, NJ, 07701-7040, USA). Polymer Preprints (American Chemical Society, Division of Polymer Chemistry), 32(3), 706 (English) 1991. CODEN: ACPPAY. ISSN: 0032-3934.

AB Spun films of poly[5,7-dodecadiyne-1,12-diol bis(butoxycarbonylurethane)] were optically clear, with a loss of .apprx.1 dB/cm. Heating above the disordering temp. (110°) could cause disorder and **degrdn.** of the nonlinear optical properties from misalignment of the polymer chains.

IT 68777-93-5

(nonlinear optical properties of, heating effect on)

RN 68777-93-5 HCA

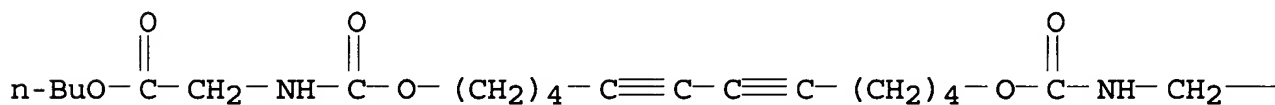
CN 5,18-Dioxa-3,20-diazadocosa-10,12-diynedioic acid, 4,19-dioxo-, dibutyl ester, homopolymer (9CI) (CA INDEX NAME)

CM 1

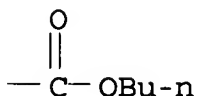
CRN 68777-92-4

CMF C26 H40 N2 O8

PAGE 1-A



PAGE 1-B



CC 37-5 (Plastics Manufacture and Processing)

Section cross-reference(s): 38, 73

IT 68777-93-5 76135-61-0

(nonlinear optical properties of, heating effect on)

L61 ANSWER 3 OF 12 HCA COPYRIGHT 2007 ACS on STN

115:93109 Photoablative etching of materials for optoelectronic integrated devices. Lemoine, P.; Magan, J. D.; Blau, W. (Dep. Pure Appl. Phys., Trinity Coll., Dublin, Ire.). Proceedings of SPIE-The International Society for Optical Engineering, 1377(Excimer Laser Mater. Process. Beam Delivery Syst.), 45-56 (English) 1991. CODEN:

PSISDG. ISSN: 0277-786X.

AB Laser photoablation of a variety of polymer (polystyrene, polycarbonate, polydiacetylene) films was obsd. at UV wavelengths. The etch curves did not fit Beer's law or the Srinivasan model but followed the trend of a multiphotonic process. Ablation occurred with minimal **degrdn.** in the remaining material. Linear absorption characteristics and chem. compn. were not the only factors which contributed to the etching mechanism. Process parameters also include mech. properties, sample purity, and microstructure.

IT 68777-87-7

(UV-laser-photoablative etching of, multiphotonic process of)

RN 68777-87-7 HCA

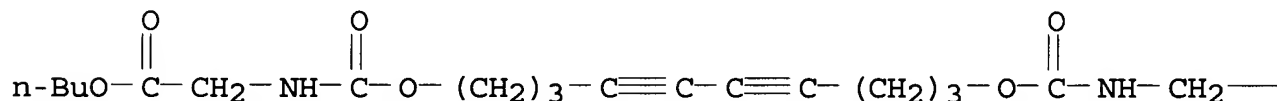
CN 5,16-Dioxa-3,18-diazaeicosa-9,11-diynedioic acid, 4,17-dioxo-, dibutyl ester, homopolymer (9CI) (CA INDEX NAME)

CM 1

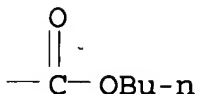
CRN 68777-86-6

CMF C24 H36 N2 O8

PAGE 1-A



PAGE 1-B



CC 35-8 (Chemistry of Synthetic High Polymers)

Section cross-reference(s): 36, 73, 76

IT 9003-53-6, Polystyrene 68777-87-7 70221-28-2

(UV-laser-photoablative etching of, multiphotonic process of)

L61 ANSWER 4 OF 12 HCA COPYRIGHT 2007 ACS on STN

115:38487 Investigations of undeveloped e-beam resist with a scanning tunneling microscope. Marrian, C. R. K.; Dobisz, E. A.; Colton, R. J. (Electron. Sci. Technol. Div., Nav. Res. Lab., Washington, DC, 20375, USA). Journal of Vacuum Science & Technology, B: Microelectronics and Nanometer Structures, 9(2, Pt. 2), 1367-70 (English) 1991. CODEN: JVTBD9. ISSN: 0734-211X.

AB A scanning tunneling microscope (STM), operated in vacuum in the field-emission mode, was used to observe the latent image written with a focussed 50 kV e-beam in a polydiacetylene neg. resist. The ability to study the latent image in the undeveloped resist allows the resoln. **degrdn.** caused by the exposure process to be sepd. from that occurring during the resist development. The min. linewidth obsd. in the resist is ≈ 80 nm in both the developed and the undeveloped resist. This linewidth is significantly greater than that expected on the basis of the 50 kV e-beam probe size, electron scattering, and secondary electrons. The results indicate that the resoln. **degrdn.** occurs during the exposure rather than during the post-exposure. This implies that swelling during development is not the crit. problem it is with other neg. resists. The quality and accuracy of the STM observations is discussed together with descriptions of related surface modifications created in situ with the STM.

IT 68777-93-5, P4BCMU

(exposure **degrdn.** of latent image formed in electron beam resist of, scanning tunneling microscope in study of)

RN 68777-93-5 HCA

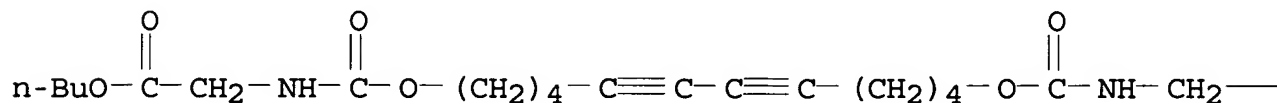
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CM 1

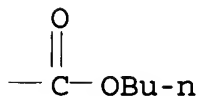
CRN 68777-92-4

CMF C26 H40 N2 O8

PAGE 1-A



PAGE 1-B



CC 74-5 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)

ST electron resist latent image polydiacetylene; exposure

degrdn polydiacetylene electron resist

IT Resists

(electron-beam, latent image exposure **degrdn.** in,
scanning tunneling microscope in study of)

IT 68777-93-5, P4BCMU

(exposure **degrdn.** of latent image formed in electron
beam resist of, scanning tunneling microscope in study of)

L61 ANSWER 5 OF 12 HCA COPYRIGHT 2007 ACS on STN

113:162336 Lithographic studies of an electron beam resist in a vacuum scanning tunneling microscope. Marrian, C. R. K.; Dobisz, E. A.; Colton, R. J. (Electron. Sci. Technol. Div., Nav. Res. Lab., Washington, DC, 20375-5000, USA). Journal of Vacuum Science & Technology, A: Vacuum, Surfaces, and Films, 8(4), 3563-9 (English) 1990. CODEN: JVTAD6. ISSN: 0734-2101.

AB The scanning tunneling microscope (STM) provides a confined low energy electron beam which can be exploited for e-beam lithog. It offers the potential of overcoming the resolu. **degrdn.** due to secondary and backscattered electrons produced by the high energy primary beam in conventional e-beam lithog. systems. A polydiacetylene neg. e-beam resist was evaluated in an STM mounted in a ultrahigh vacuum (UHV) chamber. The resist can be both imaged and exposed in situ by the STM. Under e-beam irradiation raised features are formed which can be imaged directly. A min. feature size of 20 nm was observed which is less than third of the min. feature size observed following exposure in a high voltage e-beam writer and development. The smallest features were written in the STM at an electron energy just above the exposure energy threshold which was measured to be about 8 eV.

IT 68777-93-5, P4BCMU

(electron beam lithog with, using vacuum scanning tunneling microscope as electron source)

RN 68777-93-5 HCA

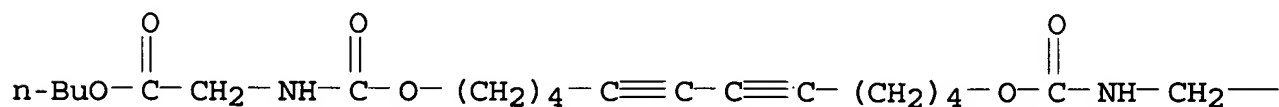
CN 5,18-Dioxa-3,20-diazadocosa-10,12-diyneedioic acid, 4,19-dioxo-, dibutyl ester, homopolymer (9CI) (CA INDEX NAME)

CM 1

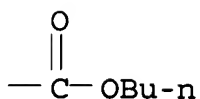
CRN 68777-92-4

CMF C26 H40 N2 O8

PAGE 1-A



PAGE 1-B



CC 74-5 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)

IT 68777-93-5, P4BCMU

(electron beam lithog with, using vacuum scanning tunneling microscope as electron source)

L61 ANSWER 6 OF 12 HCA COPYRIGHT 2007 ACS on STN

105:43800 Conjugated polymer chains in **solution**: a new phase transition of poly-4BCMU. Aime, J. P.; Fave, J. L.; Schott, M. (Groupe Phys. Solide, Univ. Paris, Paris, 75251, Fr.). Europhysics Letters, 1(10), 505-12 (English) 1986. CODEN: EULEEJ. ISSN: 0295-5075.

AB BuO2CCH2NHCO2(CH2)4C.tplbond.CC.tplbond.C(CH2)4O2CNHCH2CO2Bu homopolymer. [76135-61-0] **solns.** in toluene were studied as a function of temp. by DSC and resonance Raman scattering (RRS). Upon cooling, 2 transitions occur at .apprx.65 and 55°, resp., independent of polymer concn. The corresponding enthalpy changes are ≈2.3 and ≥0.6 kcal/mol of monomer repeat unit, resp. The color change is assocd. with the upper transition, but RRS shows that the polymer electronic structure changes at both transitions. A large hysteresis is obsd., and upon heating, the 2 transitions occur almost simultaneously at .apprx.75°. Thermal **degrdn.** influences the transition temps. and enthalpies and the properties of the intermediate phase.

IT 68777-93-5

(phase transition of **solns.** of, thermodyn. of)

RN 68777-93-5 HCA

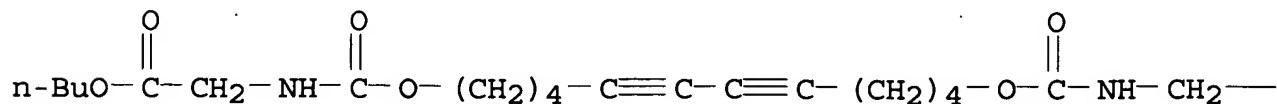
CN 5,18-Dioxa-3,20-diazadocosa-10,12-diynedioic acid, 4,19-dioxo-, dibutyl ester, homopolymer (9CI) (CA INDEX NAME)

CM 1

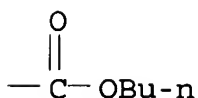
CRN 68777-92-4

CMF C26 H40 N2 O8

PAGE 1-A

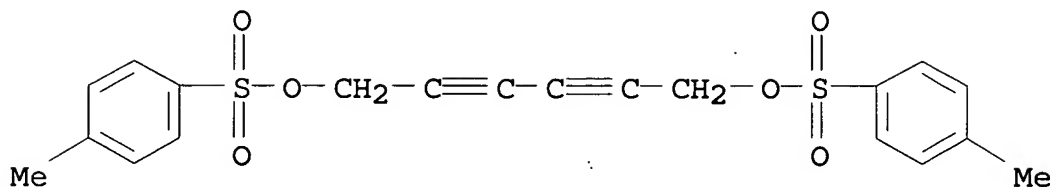


PAGE 1-B



- CC 36-7 (Physical Properties of Synthetic High Polymers)
 ST phase transition thermodyn polydiacetylene **soln**
 IT Thermodynamics
 (of phase transition of polydiacetylenes in **soln.**)
 IT Heat of transition
 (of polydiacetylenes in **soln.**)
 IT Polyacetylenes
 (polydiacetylenes, phase transition of **solns** of,
 thermodn. of)
 IT **68777-93-5** 76135-61-0
 (phase transition of **solns.** of, thermodyn. of)
- L61 ANSWER 7 OF 12 HCA COPYRIGHT 2007 ACS on STN
 101:101807 High resolution electron microscopy of molecular crystals.
 III. Radiation processes at room temperature. Fryer, J. R.;
 Holland, F. (Chem. Dep., Univ. Glasgow, Glasgow, G12 8QQ, UK).
 Proceedings of the Royal Society of London, Series A: Mathematical,
 Physical and Engineering Sciences, 393(1805), 353-69, 2 plates
 (English) 1984. CODEN: PRLAAZ. ISSN: 0080-4630.
- AB High-resoln. electron microscopy has shown that the morphol. of
 radiation damage was similar for a wide range of cryst. org. compds.
 The considerable lack of contrast suffered by halogenated compds. in
 regions of radiation damage seems to arise from preferential loss of
 halogen from these areas. This aspect of loss of peripheral atoms
 from the mol. is also supported by results obtained by encapsulating
 the specimen between C and other films. The encapsulation reduced
 the effect of radiation damage, and it is suggested that the
 encapsulation held the peripheral atoms in the crystal, which
 enabled them to recombine with ions and radicals formed by the
 damage and to prevent mol. **degrdn.** A reaction mechanism
 based on this premise is proposed.
- IT **32535-60-7**
 (electron microscopy of, radiation damage in high-resoln.)
 RN 32535-60-7 HCA
 CN 2,4-Hexadiyne-1,6-diol, bis(4-methylbenzenesulfonate), homopolymer
 (9CI) (CA INDEX NAME)
- CM 1
- CRN 32527-15-4

CMF C20 H18 O6 S2



CC 75-12 (Crystallography and Liquid Crystals)

IT 147-14-8 191-07-1 198-55-0 574-93-6 630-06-8 9001-05-2
 14832-14-5 25397-26-6 **32535-60-7**

(electron microscopy of, radiation damage in high-resoln.)

L61 ANSWER 8 OF 12 HCA COPYRIGHT 2007 ACS on STN

101:7746 Radiation damage and HREM of polydiacetylene crystals. Read, R. T.; Young, R. J. (Queen Mary Coll., London, E1 4NS, UK). Conference Series - Institute of Physics, 68(Electron Microsc. Anal., 1983), 23-6 (English) 1984. CODEN: IPHSAC. ISSN: 0305-2346.

AB Single crystals of polydiacetylenes (C:tplbond.CCR:CR)_n (R = p-MeC₆H₄SO₃CH₂) (I) [**32535-60-7**] and (C:tplbond.CCR:CR)_n [R = (carbazol-9-yl)methyl] (II) [65461-63-4] were analyzed by high-resoln. electron microscopy (HREM), and the radiation damage occurring during their examn. was monitored by following the decay of electron diffraction patterns. Crystals of II were more stable than I crystals, and the radiation damage depended on orientation of the crystals on the substrate. The radiation damage occurred via crosslinking rather than **degrdn**. Lattice images were obtained for II but could not to be obtained for I. A contrast from the chain-end dislocation dipole was obsd.

IT **32535-60-7**

(high-resoln. electron microscopy of single crystals of,
 radiation damage in)

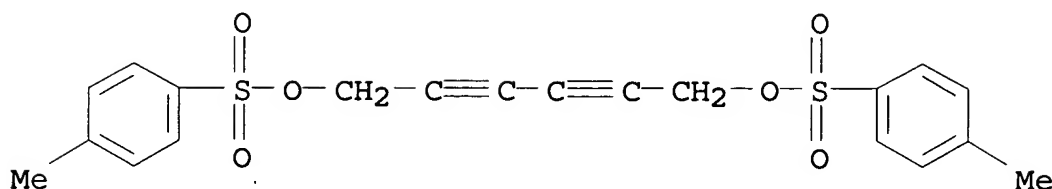
RN 32535-60-7 HCA

CN 2,4-Hexadiyne-1,6-diol, bis(4-methylbenzenesulfonate), homopolymer
 (9CI) (CA INDEX NAME)

CM 1

CRN 32527-15-4

CMF C20 H18 O6 S2



CC 35-8 (Chemistry of Synthetic High Polymers)

Section cross-reference(s): 36, 74, 75

IT 32535-60-7 51853-07-7 65461-63-4 74977-07-4

(high-resoln. electron microscopy of single crystals of,
radiation damage in)

L61 ANSWER 9 OF 12 HCA COPYRIGHT 2007 ACS on STN

96:77587 Thermochromic polyacetylenic composition, temperature-measuring and indicia-displaying devices and a process or recording and thereafter erasing images. Yee, Kwok Chun; Preziosi, Anthony Frank; Patel, Gordhanbhai Nathalal; Chance, Ronald Richard; Miller, Granville Guy; Baughman, Ray Henry (Allied Chemical Corp., USA). Eur. Pat. Appl. EP 36899 A1 19811007, 51 pp. DESIGNATED STATES: R: CH, DE, FR, GB, IT, SE. (English). CODEN: EPXXDW. APPLICATION: EP 1980-101651 19800327.

AB Thermochromic compns. useful in temp.-indicator and indicia-display devices exhibiting reversible color changes at transition temp. in -180 to 220° range and withstanding many thermochromic cycles with no apparent **degrdn.** are comprised of polydiacetylenes prepd. from $RNHOCO(CH_2)_n C.tplbond.CC.tplbond.C(CH_2)_n OCONHR_1$ (I; R, R₁ = iso-Pr, octadecyl, C1-4 p-, m-alkylphenyl, o-, m-chlorophenyl, C1-4 monochloroalkyl for n = 4; R, R₁ = C1-4 m-alkylphenyl, m-, p-chlorophenyl for n = 3; R, R₁ = C1-4 m-alkylphenyl, p-methoxyphenyl, C1-4 m-alkoxyphenyl for n = 2), polyacetylenic network polymers derived by 1,4 addn. of $[OCONH(CH_2)_6 NHOCO(CH_2)_n C.tplbond.CC.tplbond.C(CH_2)_2 C.tplbond.CC.tplbond.C(CH_2)_n]_x$ (x is large and n = 2-6) and $[OCONH(CH_2)_6 NHOCO(CH_2)_n [C.tplbond.CC.tplbond.C(CH_2)_2]_2 C.tplbond.CC.tplbond.C(CH_2)_n]_x$ (II; x is large and n = 3), and partially polyadd. acetylenic compds. contg. .apprx.0.1-50 wt.% polymer obtained by polyadd. I or II or one of the following $R_2NHOCO(CH_2)_n C.tplbond.CC.tplbond.C(CH_2)_2 C.tplbond.CC.tplbond.C(CH_2)_n OCONHR_3$ (n = 3, 4 and R₂, R₃ = C1-18 alkyl; n = 2 and R₂, R₃ = C2-18 alkyl), $R_4NHOCO(CH_2)_n [C.tplbond.CC.tplbond.C(CH_2)_2]_2 C.tplbond.CC.tplbond.C(CH_2)_n OCONHR_5$ (n = 4 and R₄, R₅ = C2-18 alkyl; n = 2, 3 and R₄, R₅ = C1-18 alkyl), and $[HO(CH_2)_n C.tplbond.CC.tplbond.C(CH_2)_2 C.tplbond.C]_2$ (n = 2, 3). Thus, a polydiacetylene (I; R, R₁ = butoxycarbonylmethyl; n = 3) 15% was incorporated into a Halar film (by molding at 260°) to give a black film which turned orange

at 185° and reversed to black upon cooling to room temp. The polymer crystals turned red-orange from metallic green-gold at 135°.

IT 68777-87-7 68777-89-9 68777-91-3
68777-93-5

(thermochromic recording with)

RN 68777-87-7 HCA

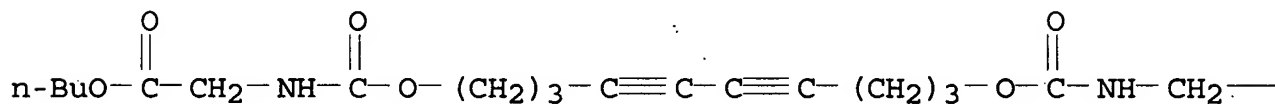
CN 5,16-Dioxa-3,18-diazaeicosa-9,11-diynedioic acid, 4,17-dioxo-,
dibutyl ester, homopolymer (9CI) (CA INDEX NAME)

CM 1

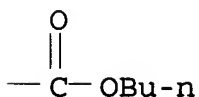
CRN 68777-86-6

CMF C24 H36 N2 O8

PAGE 1-A



PAGE 1-B



RN 68777-89-9 HCA

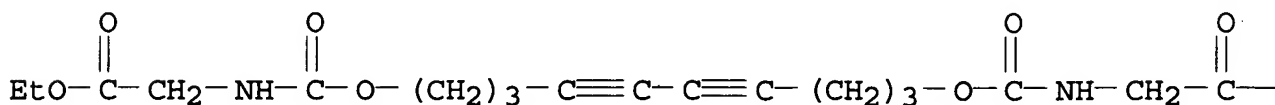
CN 5,16-Dioxa-3,18-diazaeicosa-9,11-diynedioic acid, 4,17-dioxo-,
diethyl ester, homopolymer (9CI) (CA INDEX NAME)

CM 1

CRN 68777-88-8

CMF C20 H28 N2 O8

PAGE 1-A



PAGE 1-B

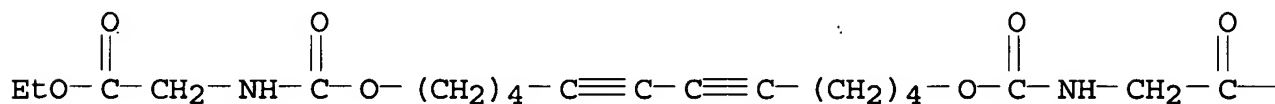
— OEt

RN 68777-91-3 HCA
 CN 5,18-Dioxa-3,20-diazadocosa-10,12-diynedioic acid, 4,19-dioxo-,
 diethyl ester, homopolymer (9CI) (CA INDEX NAME)

CM 1

CRN 68777-90-2
 CMF C22 H32 N2 O8

PAGE 1-A



PAGE 1-B

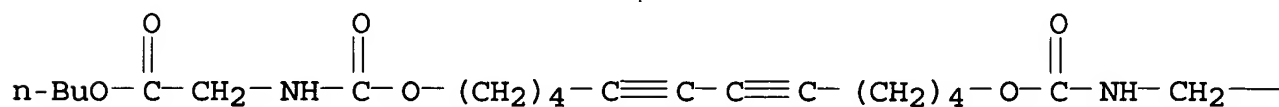
— OEt

RN 68777-93-5 HCA
 CN 5,18-Dioxa-3,20-diazadocosa-10,12-diynedioic acid, 4,19-dioxo-,
 dibutyl ester, homopolymer (9CI) (CA INDEX NAME)

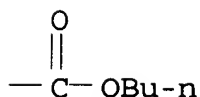
CM 1

CRN 68777-92-4
 CMF C26 H40 N2 O8

PAGE 1-A



PAGE 1-B



IC C08L049-00; C08F002-46; C08F002-48; C08F038-00; G01K011-16
 CC 74-9 (Radiation Chemistry, Photochemistry, and Photographic and
 Other Reprographic Processes)

IT 68777-87-7 68777-89-9 68777-91-3
 68777-93-5 76418-34-3 80498-49-3 80498-50-6
 80498-51-7 80498-52-8 80498-53-9 80498-54-0 80498-55-1
 80498-56-2 80498-58-4
 (thermochromic recording with)

L61 ANSWER 10 OF 12 HCA COPYRIGHT 2007 ACS on STN

94:74762 Thermochromic polyacetylenes containing urethane groups.
 Baughman, Ray H.; Chance, Ronald R.; Miller, Granville G.; Patel,
 Gordhanbhai N.; Preziosi, Anthony F.; Yee, Kwok C. (Allied Chemical
 Corp., USA). U.S. US 4215208 19800729, 18 pp. (English). CODEN:
 USXXAM. APPLICATION: US 1977-839678 19771005.

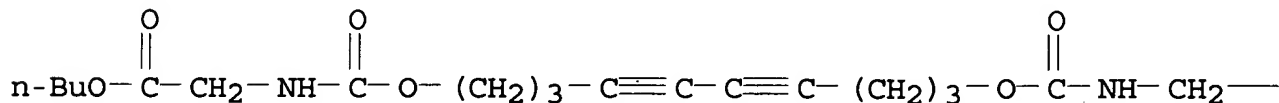
AB Thermochromic polyacetylenes are described which are useful in
 temp.-indicator and indicia-display device applications as well as
 laser-beam recording materials. These polyacetylenes exhibit
 reversible color changes at -180 to +220° and the
 thermochromic cycles can be repeated many times with no apparent
degrdn. and little change in spectroscopic properties.
 Thus, the polymer of the reaction product of 4,6-decadyn-1,10-diol
 with Bu isocyanatoacetate was molded at 200° into a thin
 film. The film, which showed a green-gold color at room temp.,
 turned red orange at -185°. Upon cooling the green-gold
 color returned.

IT 68777-86-6P 68777-88-8P 68777-92-4P
 (prepn. and polymn. of)

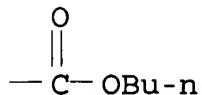
RN 68777-86-6 HCA

CN 5,16-Dioxa-3,18-diazaeicosa-9,11-diyneedioic acid, 4,17-dioxo-,
 dibutyl ester (9CI) (CA INDEX NAME)

PAGE 1-A

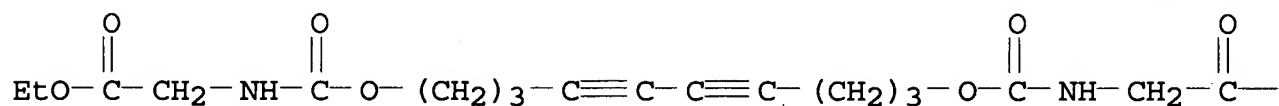


PAGE 1-B



RN 68777-88-8 HCA
CN 5,16-Dioxa-3,18-diazaeicosa-9,11-diynedioic acid, 4,17-dioxo-, diethyl ester (9CI) (CA INDEX NAME)

PAGE 1-A

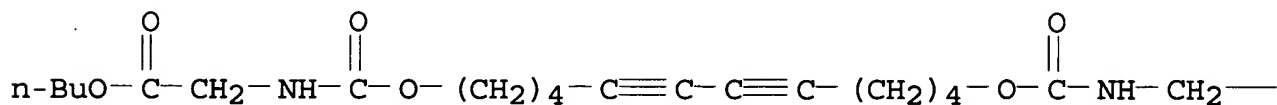


PAGE 1-B

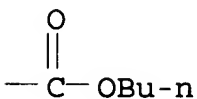


RN 68777-92-4 HCA
CN 5,18-Dioxa-3,20-diazadocosa-10,12-diynedioic acid, 4,19-dioxo-, dibutyl ester (9CI) (CA INDEX NAME)

PAGE 1-A



PAGE 1-B



IT 68777-87-7P 68777-89-9P 68777-91-3P
68777-93-5P 75240-46-9P 76418-03-6P
(prepn. and thermochromic properties of)

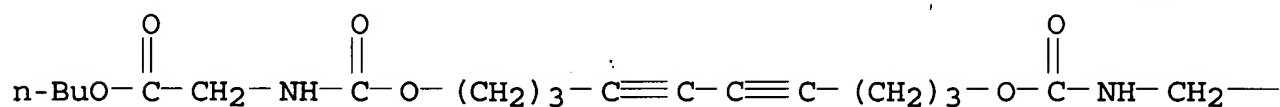
RN 68777-87-7 HCA
 CN 5,16-Dioxa-3,18-diazaeicosa-9,11-diynedioic acid, 4,17-dioxo-,
 dibutyl ester, homopolymer (9CI) (CA INDEX NAME)

CM 1

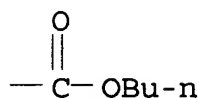
CRN 68777-86-6

CMF C24 H36 N2 O8

PAGE 1-A



PAGE 1-B



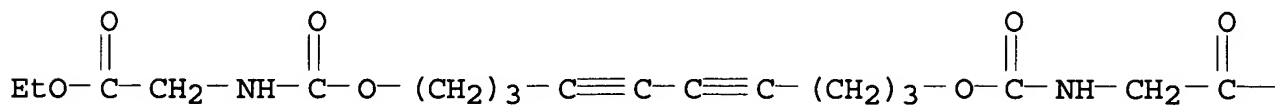
RN 68777-89-9 HCA
 CN 5,16-Dioxa-3,18-diazaeicosa-9,11-diynedioic acid, 4,17-dioxo-,
 diethyl ester, homopolymer (9CI) (CA INDEX NAME)

CM 1

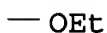
CRN 68777-88-8

CMF C20 H28 N2 O8

PAGE 1-A



PAGE 1-B



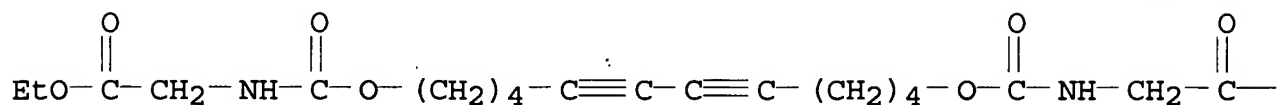
RN 68777-91-3 HCA
 CN 5,18-Dioxa-3,20-diazadocosa-10,12-diynedioic acid, 4,19-dioxo-,
 diethyl ester, homopolymer (9CI) (CA INDEX NAME)

CM 1

CRN 68777-90-2

CMF C22 H32 N2 O8

PAGE 1-A



PAGE 1-B

—OEt

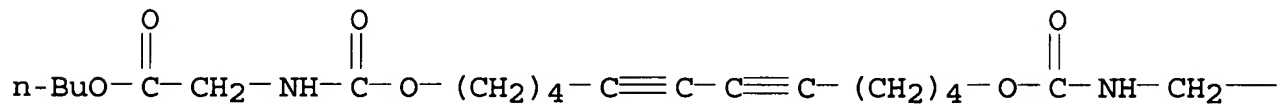
RN 68777-93-5 HCA
 CN 5,18-Dioxa-3,20-diazadocosa-10,12-diynedioic acid, 4,19-dioxo-,
 dibutyl ester, homopolymer (9CI) (CA INDEX NAME)

CM 1

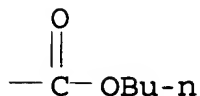
CRN 68777-92-4

CMF C26 H40 N2 O8

PAGE 1-A



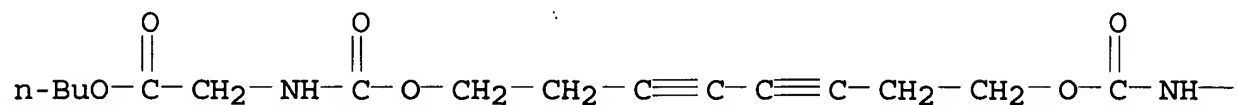
PAGE 1-B



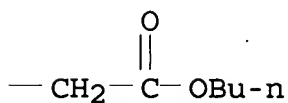
RN 75240-46-9 HCA

CN 5,14-Dioxa-3,16-diazaoctadeca-8,10-diynedioic acid, 4,15-dioxo-, dibutyl ester (9CI) (CA INDEX NAME)

PAGE 1-A



PAGE 1-B



RN 76418-03-6 HCA

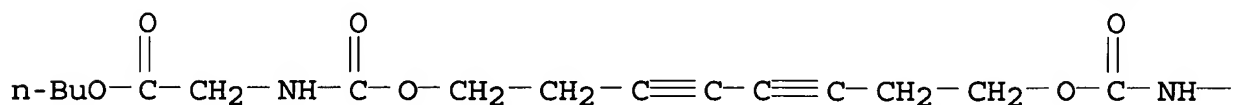
CN 5,14-Dioxa-3,16-diazaoctadeca-8,10-diynedioic acid, 4,15-dioxo-, dibutyl ester, homopolymer (9CI) (CA INDEX NAME)

CM 1

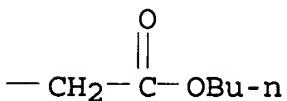
CRN 75240-46-9

CMF C22 H32 N2 O8

PAGE 1-A



PAGE 1-B



IC C08L049-00

INCL 526285000

CC 74-8 (Radiation Chemistry, Photochemistry, and Photographic

Processes)

IT 53155-37-6P 68777-86-6P 68777-88-8P
 68777-92-4P 71456-51-4P 73708-01-7P 73824-08-5P
 73824-11-0P 73824-21-2P 76379-57-2P 76379-58-3P 76379-59-4P
 76379-60-7P 76379-61-8P 76379-62-9P 76379-63-0P 76379-64-1P
 76379-65-2P 76379-71-0P 76379-74-3P
 (prepn. and polymn. of)
 IT 24996-72-3P 42404-57-9P 42404-99-9P 52411-83-3P 62516-40-9P
 68777-87-7P 68777-89-9P 68777-91-3P
 68777-93-5P 71456-52-5P 73708-00-6P 73708-02-8P
 73824-07-4P 73824-13-2P 73824-15-4P 73824-20-1P
 75240-46-9P 75797-55-6P 76379-75-4P 76379-76-5P
 76379-77-6P 76379-78-7P 76379-79-8P 76379-80-1P 76379-81-2P
 76379-82-3P 76379-83-4P 76379-84-5P 76379-85-6P 76379-86-7P
 76398-78-2P 76417-96-4P 76417-97-5P 76417-98-6P 76417-99-7P
 76418-00-3P 76418-01-4P 76418-02-5P 76418-03-6P
 76418-04-7P 76418-05-8P 76418-06-9P 76418-07-0P 76418-13-8P
 76418-14-9P 76418-15-0P 76418-16-1P 76418-17-2P 76418-18-3P
 76418-19-4P 76418-20-7P 76418-21-8P 76418-22-9P 76428-95-0P
 (prepn. and thermochromic properties of)

L61 ANSWER 11 OF 12 HCA COPYRIGHT 2007 ACS on STN

89:25042 ESR studies of a diacetylene polymer. III. Thermal history effects and temperature dependence of polycrystalline samples. Stevens, G. C.; Bloor, D. (Dep. Phys., Queen Mary Coll., London, UK). Physica Status Solidi A: Applied Research, 46(2), 619-26 (English) 1978. CODEN: PSSABA. ISSN: 0031-8965.

AB Paramagnetism in diacetylene polymer is due to defect states produced by departure of the polymer chain from some ideal equil. form, as detd. from the singlet ($g \approx 2$) ESR spectrum of polycrystn. bis(p-toluenesulfonate)diacetylene polymer [32535-60-7] prepd. by thermal polymn. after storage at subambient temp. The spin concn. of the polymer was independent of the thermal history of the sample. At 373K paramagnetic centers due to polymer **degrdn.** were obsd. At low temps. spectral changes were obsd. which correlated with the 200K second order phase transition. The results are interpreted with the model of polymer chain defect- induced paramagnetism.

IT 32535-60-7
 (ESR of, thermal history effect on)

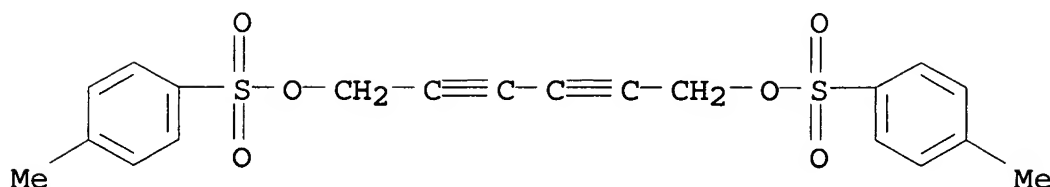
RN 32535-60-7 HCA

CN 2,4-Hexadiyne-1,6-diol, bis(4-methylbenzenesulfonate), homopolymer (9CI) (CA INDEX NAME)

CM 1

CRN 32527-15-4

CMF C20 H18 O6 S2



CC 35-6 (Synthetic High Polymers)

Section cross-reference(s): 73

IT 32535-60-7 51853-07-7

(ESR of, thermal history effect on)

L61 ANSWER 12 OF 12 HCA COPYRIGHT 2007 ACS on STN

87:44258 Time-temperature history indicators. Patel, Gordhanbhai N.; Preziosi, Anthony F.; Baughman, Ray H. (Allied Chemical Corp., USA). U.S. US 3999946 19761228, 12 pp. (English). CODEN: USXXAM.

APPLICATION: US 1976-660562 19760223.

AB Compds. contg. ≥ 2 conjugated acetylene groups are prepd.

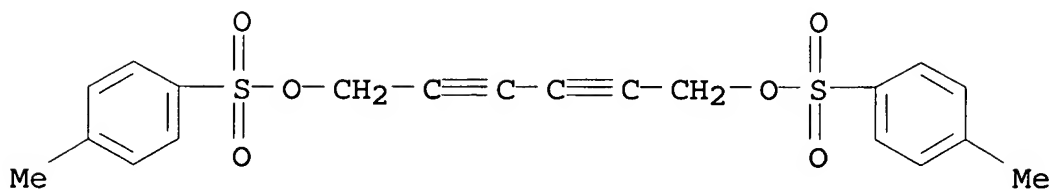
These compds. show sequences of irreversible color changes at specific combinations of times, and temps. and can thus be affixed to perishable products such as foods, pharmaceuticals or chems. to indicate whether the product has been exposed to an undesirable time-temp. history that might cause **degrdn.**, or whether it has been exposed to the desired time-temp. history during processing. For example, Cadiot-Chodkiewicz reaction of 3-bromopropyn-1-ol [2060-25-5] with 1,5-hexadiyne [628-16-0] gave 2,4,8-nonatriyn-1-ol (I) [62516-43-2] and 2,4,8,10-dodecatetrayn-1,12-diol (II) [62516-44-3]. 2,4,8,10,14,16-Octadecahexayn-1,18-diol (III) [62741-36-0] was prepd. by oxidative coupling of I. I, II and III were treated with isocyanates to give urethanes, one of which [EtNHCO2CH2C.tplbond.CC.tplbond.CCH2CH2]2(C.tplbond.C)2 [62516-46-5] was medium pink after 16 h at 250° in daylight, light pink after 2 weeks at 5° in the dark, light purple after 10 min at 100°, medium purple after 10 min at 115°, and dark purple after 10 min at 125°. Low temp. γ -irradn. greatly increased the thermal reactivity of some of the compds.

IT 32527-15-4

(color changes of, as time temp. history indicator)

RN 32527-15-4 HCA

CN 2,4-Hexadiyne-1,6-diol, bis(4-methylbenzenesulfonate) (9CI) (CA INDEX NAME)



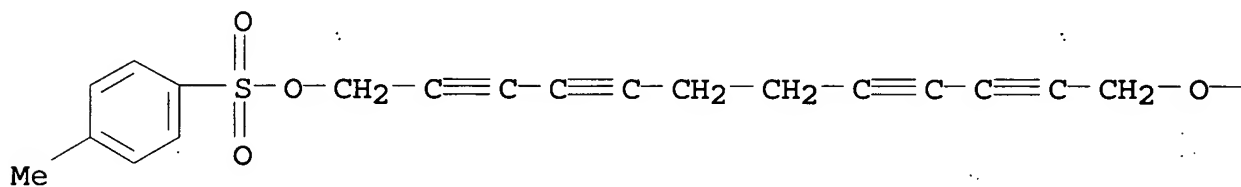
IT 62516-37-4 62516-39-6

(color changes of, as time-temp. history indicator)

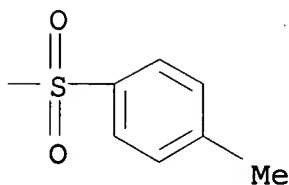
RN 62516-37-4 HCA

CN 2,4,8,10-Dodecatetrayne-1,12-diol, bis(4-methylbenzenesulfonate)
(9CI) (CA INDEX NAME)

PAGE 1-A



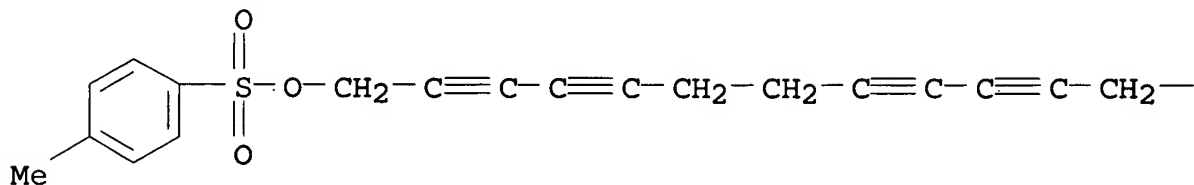
PAGE 1-B



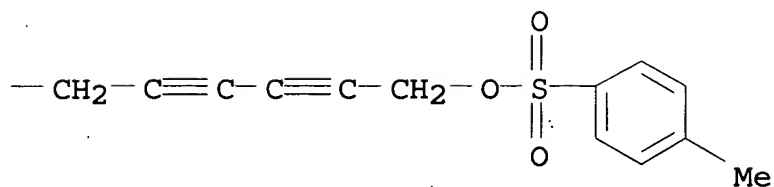
RN 62516-39-6 HCA

CN 2,4,8,10,14,16-Octadecahexayne-1,18-diol, bis(4-methylbenzenesulfonate) (9CI) (CA INDEX NAME)

PAGE 1-A



PAGE 1-B



IC G01N031-22

INCL 023253000TP

CC 63-8 (Pharmaceuticals)

Section cross-reference(s): 17

IT 23487-69-6 32527-15-4

(color changes of, as time temp. history indicator)

IT 23487-69-6 24996-70-1 32527-15-4 53394-72-2

61660-59-1 62516-29-4 62516-30-7 62516-31-8 62516-32-9

62516-33-0 62516-34-1 62516-35-2 62516-36-3 62516-37-4

62516-38-5 62516-39-6 62516-40-9 62516-41-0

62516-46-5 62518-91-6 62518-93-8 62518-95-0 62518-99-4

62519-00-0 62519-01-1 62541-11-1 62741-35-9

(color changes of, as time-temp. history indicator)